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Solving the Peculiar and Personal Problems of the Industrial Advertiser

NATIONAL INDUSTRIAL ADVERTISERS ASSOCIATION, INC.
537 So. Dearborn St. Chicago, Illinois

TO Advertising Managers, Sales Managers and Executives who sell products to Industrial America:

The 1935 convention of the National Industrial Advertisers Association will bring together in a single three day conference, the answers to many of the problems now confronting the manufacturer covering the advertising, merchandising and sale of industrial products.

The program, carefully planned and balanced by men who have devoted their careers to advertising and sales promotion, is practical, all embracing and highly instructive. It is advanced in the sense of being fully up-to-date but has due regard for established fundamentals.

This program has been created for the executive who is advertising minded and uses advertising as a useful tool, as well as for the specialist who is highly skilled in his profession. Every one who attends this conference conscientiously will carry ideas away which he can profitably employ in his business . . . It is recommended very seriously to all thinking executives.

The conference will be held in Pittsburgh, Pa. September 18th, 19th and 20th at the William Penn Hotel. It is suggested that advance reservations be made through the secretary of the Industrial Advertising Council, P.O. Box 1198, Pittsburgh, Pa., to insure satisfactory accommodations.

Yours sincerely

NATIONAL INDUSTRIAL ADVERTISERS ASSN.

General Chairman,
1935 Pittsburgh Conference

AUTOMOTIVE INDUSTRIES

Vol. 73, No. 9 ▫ THIRTY-SEVENTH YEAR ▫ August 31, 1935

Workers Split on Union Set-Up

West Coast Assembly Plant Planned by Studebaker Corp.

Conversion of a Los Angeles, Calif., factory into a final assembly plant to serve the west coast has been announced by Studebaker Corp. officials. The one-story plant with an area of 100,000 square feet is expected to go into production about the middle of November. Between 100 and 150 men will be employed, a few of whom will be transferred from the South Bend plant. It is stated that the west coast assembly plant will effect a saving in freight rates as the tariff on assembled cars is higher than on the components.

"Progressive" Faction Wants Autonomy and Rejects Dillon

by Harold E. Gronseth
Detroit News Editor, Automotive Industries

The American Federation of Labor has found the going rough in its efforts to launch an international union of automobile workers. From the very start of the convention, held in Detroit this week, for the purpose of chartering the United Automobile Workers Federal Unions and the drafting of a constitution, it was apparent that many of the delegates would oppose domination by the A. F. of L. and its president William Green.

Dissension flared early in the sessions, the convention splitting into two factions, a so-called conservative group favoring the Federation's position on control and a "progressive" group demanding complete autonomy. Controversy revolved about two main issues. The Federation insisted on naming the first officers and exercising supervision until it decided the new union was on a firm basis. It also wanted to limit membership to production workers, excluding the specialized skilled workers who already have craft unions.

A resolution proposed by Mr. Green naming the Detroit general organizer, F. J. Dillon, first president was defeated by a vote of 164 to 112. Opposition came chiefly from delegates from other states. They were not particularly opposed to Mr. Dillon personally but resented domination by Mr. Green and the Federation, and insisted on electing their own officials. Control during its embryonic period and the right to name the first officers were conditions laid down by the A. F. of L. in its offer of a charter. Controversy over this point continued through Wednesday, various committee meetings failing to iron out the differences. The problems confronting the convention had become so serious by Tuesday evening that neither Mr. Green nor Mr. Dillon found time to appear for their scheduled addresses.

The so-called progressives, who constitute the majority faction, are clamoring for an industrial union embracing the crafts as

(*Turn to page* 254, *please*)

Retail Sales Decline As New Season Nears

Gradual down-trend in automobile retail sales continues under the influence of the advancing season. There is evidence too, that depletion of dealers' stocks and approaching new model announcements are beginning to have some effect on retail sales. Companies which have let-up on sales pressure because of scanty dealer stocks have shown substantial drops from July, but others, whose field organizations are still adequately supplied, and where sales contest serves as added incentives, are showing well sustained volume of deliveries. An example of the latter is Chevrolet whose dealers have been delivering cars and trucks at the rate of approximately 90,000 units for August.

It is estimated that the industry as a whole will show a decline of 10 to 12 per

(*Turn to page* 255, *please*)

Next Week—

The Annual Production and Factory Equipment Issue

Featuring

A complete illustrated description of the new offerings of the machine tool industry

* * *

Outstanding articles by

C. C. Carlton, Secretary of Motor Wheel and APEM President
H. H. Curtice, President of Buick
H. E. Gronseth, Detroit News Editor, Automotive Industries
C. J. Stilwell, Vice-President of Warner & Swazey and President of the National Machine Tool Builders' Association

* * *

An appraisal of accomplishments under the President's Automobile Settlement entitled:

An Experiment in Automotive Labor Relations

By Dr. Leo Wolman
Chairman of the Automobile Labor Board

Organized Labor Seen Waiting Chance to Hale Motor Cases Before New NLRB

With the Presidential announcement last Friday of the names of the three members of the new National Labor Relations Board set up under the Wagner-Connery Act, prediction is made freely that the Board soon will be swamped with cases. Although supporters of the organized labor-sponsored Act have made claims that it will "bring peace in industry," a decidedly contrary view is held by industry generally which bitterly opposed the legislation.

As soon as the Board and its personnel are organized, and policy of procedure ready for operation it is believed organized labor will be quick to bring cases in the steel and automobile, as well as other industries. Renewal of cases which were dropped with the Supreme Court NRA decision is said to be in prospect, together with new cases which promise to bring about a trek of industrial and labor representatives to the Board in Washington and to its regional boards. It is believed also that the Steel Labor Relations Board and the Textile Labor Board, now attached to the mediation division of the Department of Labor, will be transferred to the new National Labor Relations Board, to handle cases in those industries. Separate boards, under the jurisdiction of the National Labor Board, may also be established for other major industries, it is reported.

Much interest is being shown as to whether such a board will be established for the automobile industry to replace the abandoned Automobile Labor Board to which organized labor was so hostile.

Union Plans

Organized labor clearly hopes to gain the ascendancy in membership in both the automobile and steel industries as well as others and will make the utmost use of the new Wagner-Connery Act to achieve its demands. As much was plainly indicated again last week at the meeting of organized labor in Atlantic City. It hopes to make its drive swiftly before the act comes before the Supreme Court for the inevitable test as to its constitutionality.

Heading the Board is Joseph Warren Madden, law professor at the University of Pittsburgh, named to serve for five years. John Michael Carmody, New York, member of the National Mediation Board, was chosen for a term of three years. Edwin S. Smith, Massachusetts, member of the National Labor Board created under NRA, was named to serve one year.

Mr. Madden, formerly a member of the Pennsylvania Committee on Planning and Industry, has practiced law in Pennsylvania and in Illinois and has taught law at Ohio State University and the University of West Virginia, as well as at the University of Pittsburgh. He was a special assistant to the Attorney General in 1920 under the Harding Administration.

Mr. Carmody was formerly chairman of the National Bituminous Coal Labor Board and at one time was chief engineer of the Civil Works Administration.

Mr. Smith formerly was Massachusetts Commissioner of Labor and Industries and long has been active in labor and industrial relations. Last year he was appointed by President Roosevelt as an observer at the International Labor Organization Conference at Geneva.

Chairman Madden last Saturday said it probably would be about two weeks before the new Labor Board would be ready to receive complaints and petitions for elections to determine representatives for the purpose of collective bargaining. This would mean complaints and petitions will begin to come to the board toward the end of the first week in September. Meanwhile Mr. Madden has arranged to call all regional directors to Washington for an organization conference. It was stated that complaints and petitions will be handled by the new board much like they were handled by the old board and they will be reviewed by the National Board upon appeal from regional boards.

The board will have headquarters in the Department of Labor offices. Mr. Madden's only experience in labor troubles has been confined to two cases. Last summer he was impartial arbiter in a street car wage dispute in Pittsburgh and he once served on a commission set up by former Governor Pinchot of Pennsylvania to investigate the use of industrial police in that state.

NRA Planning Study of Motor Industry

NRA is launching studies of the automotive, steel and other major industries. The scope and nature of the automotive study has not been determined, except that it will cover automobile and parts manufacturing, wholesaling and retailing. These studies are in addition to the survey announced elsewhere in this issue which NRA is making of various retail trades including automobile retailing.

July Car, Truck Output Runs Far Ahead Of All Similar Months in Last 5 Years

July production of passenger cars in the United States and Canada, while following traditional seasonal trends, reached new high levels compared with similar months during the past five years. Not since 1929 has last month's 285,555 output been approached within an approximate 9000 by any previous July. As was to be expected production dropped off somewhat from the June level, but the loss was less than 25,000 cars; the June total being 308,885.

The production for July represented a 23 per cent increase over the 276,047 for the same month of 1934. However, it is in the seven months total that the better picture of the industry's activity is gained. For the January-July period the industry turned out 2,248,374 cars against 1,700,786 for the corresponding months of 1934, an increased production of 32 per cent.

Trucks made a new July record with 64,563 vehicles against 68,180 for the preceding June. The July truck total, like the car output, was the largest for that month since 1929 and represents a 45 per cent increase over the comparable month of last year. The seven months total on trucks was 475,215 which compares with 371,608 for the same time last year, an increase of 28%.

Combined passenger car and truck totals for July were 350,118 units, a decline of approximately 27,000 from June, but a 27 per cent gain over the 276,047 for July, 1934. Truck and passenger car output for the January-July period of this year was 2,723,589 against 2,072,394 for the same seven months last year. This is a gain of 31 per cent.

Comparison of the seven months production total of 2,351,448 units for the United States domestic market with the 2,058,003 registration of new vehicles gives an indicated increase in dealer inventories of 293,445 units during the January-July period. This indicated increase represents 240,589 passenger cars and 52,856 trucks for the first seven months.

Production—U. S. and Canada

	July, 1935	June, 1935	July, 1934	Seven Months, 1935	Seven Months, 1934
Passenger Cars—U. S. and Canada:					
Domestic Market—U. S.	259,277	276,546	.....	1,992,529	.....
Foreign Market—U. S.	16,807	20,063	.....	155,986	.....
Canada	9,471	12,276	8,407	99,859	75,491
Total	285,555	308,885	231,501	2,248,374	1,700,786
Trucks—U. S. and Canada:					
Domestic Market—U. S.	45,637	50,649	.....	358,919	.....
Foreign Market—U. S.	15,328	14,062	.....	91,759	.....
Canada	3,598	3,469	2,707	24,537	17,707
Total	64,563	68,180	44,546	475,215	371,608
Total—Domestic Market—U. S.	304,914	327,195	.....	2,351,448	.....
Total—Foreign Market—U. S.	32,135	34,125	.....	247,745	.....
Total—Canada	13,069	15,745	.....	124,396	.....
Total—Cars and Trucks—U. S. and Canada	350,118	377,065	276,047	2,723,589	2,072,394

AFL Union at Bendix Invokes Wagner Act

NLRB Gets Complaint Asking Order to Hold Bargaining Election

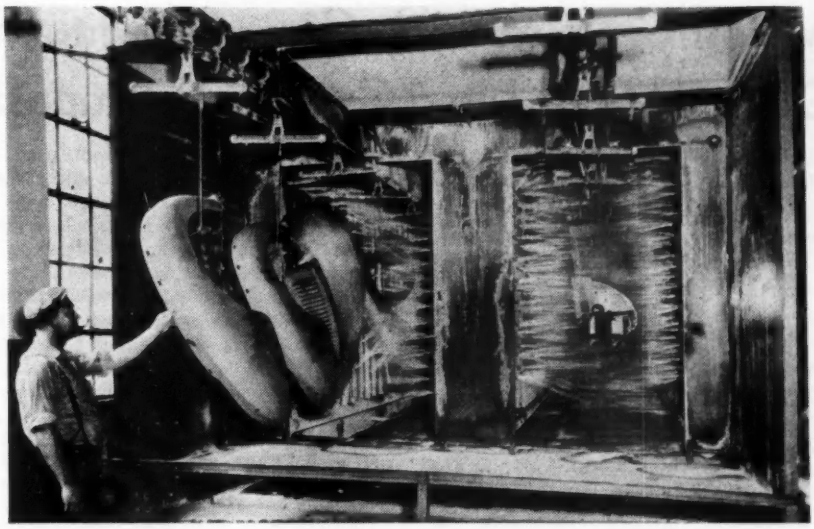
Indicative of the drive being made by the American Federation of Labor, through the vehicle of the Wagner-Connery Labor Disputes Act, to unionize the automotive industries was the first complaint filed Monday in Washington with the newly created National Labor Relations Board. Although the board will not begin to function for another week or 10 days, the United Automobile Workers, as the initial complainant, has already demanded that the board order an election to determine its right of exclusive collective bargaining at the plant of the Bendix Products Corp., South Bend, employing about 14,000 workers.

The action was taken by the union almost simultaneously with an announcement from Detroit that the American Federation of Labor, through William Green, president, had granted a charter of affiliation to the union. The union claims to represent about 35,000 workers in the automobile industry.

The complaint charges that the Bendix corporation has refused to recognize the union for purposes of collective bargaining. It is contended that the demanded election would show that the union is representative of a substantial majority of the workers.

It is expected that the case will develop methods of procedure by the new board.

The Bendix case is a renewal of a proceeding taking place under NRA. The former National Labor Board ordered an election. The Bendix Corporation appealed to the Circuit Court of Appeals in Chicago. While Charlton Ogburn was arguing the case before the court, the Supreme Court decision in the Schecter case was announced.



Sheet metal parts and Buick coil springs are here shown entering the spray booth in the new Spra-Bonderite system in the Buick sheet metal plant. Only one minute is required for the processing as against five and one-half minutes for the dip method. One thousand nozzles in this booth are supplied by two 1,000 gal. per min. pumps under a pressure equivalent to a 50-ft. head.

July Retail Sales Values Decline Less Than Seasonal

Daily average retail sales of passenger cars during July receded about four per cent less from June than is customary, according to a preliminary report issued by the Department of Commerce. The decrease was approximately 15 per cent as compared with the usual approximate 19 per cent; this is without seasonal adjustment. According to the Commerce Department the adjusted preliminary index of retail sales value showed a slight increase during July over June.

The preliminary index of retail sales values for July is 80.1, on the basis of the 1929-1931 average of 100, compared with 78.5 in June and 70.0 in May. July sales, according to the report, were approximately 20 per cent greater than those of the same month last year and rose 55 per cent above July, 1933, sales. The report indicates sales for the first seven months of this year were 37 per cent above those for the corresponding 1934 period.

The accompanying table shows July and June comparative indexes for 1935, 1934 and 1933:

	Unadjusted			Adjusted		
	1935	1934	1933	1935	1934	1933
June ...	104.9	84.6	65.2	78.5	63.5	49.0
July ...	89.0	73.9	57.5	81.0	67.0	52.5

Hudson Promotes Byrne, Powers, Turrill, Hadley

Promotion of four sales executives is announced by William R. Tracy, vice-president in charge of sales of the Hudson Motor Car Company. H. F. Byrne, formerly district manager in charge of the Central District, has been elevated to the post of assistant sales manager with headquarters at the factory. M. T. Powers, formerly eastern zone manager, has been made district manager of the Central District with headquarters in Detroit. Fred D. Turrill has been made zone manager of the Hudson and Terraplane Sales Corporation in New York. He was formerly zone manager in Milwaukee and his position there has been filled by C. A. J. Hadley who will head the Hudson and Terraplane Sales Corporation in Milwaukee. Mr. Hadley was formerly district representative in the Kansas City territory.

Instal Camera in Bluebird for Bonneville Test Runs

A small automatic motion-picture camera will be installed in the cockpit of Campbell's Bluebird when he makes his record try on the Utah salt beds, an AP report from London says. The camera will make a continuous record of instrument readings during the record attempts.

NRA to Study Code Termination Effect on Car Retailing Labor, Trade Practices

Motor vehicle retailing will be included in a list of distributing trades and other national distribution industries which are to be the object of a field survey to be made by the National Industrial Recovery Administration.

The purpose of the survey, to be made by regional and state directors of NRA, will be to determine changes in labor and trade practice standards which have resulted in the affected industries since termination of the codes. The survey is being undertaken to furnish data of a representative and uniform nature to the Committee on Changes in Labor and Trade Practice Standards.

NRA representatives will confine the survey to the metropolitan areas in which they are located and seek factual information as to employment, including changes in hours, wages, etc. In the motor vehicle retailing trade reference also will be made to trade-in allowances.

Covering all industries, the survey will deal with changes in fair trade standards, such as more favorable credit terms, more liberal return goods policies and other trade practices affecting sales, which were formerly regulated by codes. In the case of manufacturing industries the trade practices will include discounts, allowances, consignments, etc.

It was pointed out that the survey, which is merely for fact finding purposes, is in no sense an investigation of individual concerns and that the data assembled will be held as confidential information by the government. Surveys in additional industries will be started in the near future.

Majority of Makers Give Conditional OK to NADA Used Car Guide Proposal

Conditioned on other manufacturers doing likewise, General Motors, Chrysler, Studebaker, Nash, Hudson, Hupp, Pierce-Arrow and Auburn have agreed to bulletin their dealers requesting them to submit reports of used car sales regularly to the National Automobile Dealers Association for use in compiling the Association's Guide Book and urging them to use the Guide Book in their used car operations.

Of the major manufacturers, the current issue of the NADA Bulletin says only Ford has not given written assurance one way or the other on the Guide Book. Whether Ford will go along could not be determined nor could it be learned whether those makers who have accepted the proposal conditionally will give final approval unless Ford concurs. There is some possibility, however, that those manufacturers who have given their approval will consider that a majority of manufacturers is sufficient, whether the majority includes Ford or not.

In return for this endorsement by the manufacturers, the NADA has agreed to permit the factories to send representatives to St. Louis to check the methods used in arriving at the Guide Book values. The association also agrees to separate Guide Book activities and finances from other activities of the organization, and to publish and sell the book on a non-profit basis to be determined by a recognized firm of accountants.

Carrying out this plan, the Association has established new prices for the Guide Book effective Sept. 1 based on cost figures projected by Ernst & Ernst. The new prices are $10 for one indentification manual with supplements and 12 issues of the price supplement. Subscription to the price sections alone is $8. The Guide will be available to all dealers at these prices whether or not they belong to the NADA.

The Association, which for some time has been giving increasing evidences that it feels that it has no more important task than the perpetuation of itself as publisher of a used car guide book, regards these endorsements as an achievement of far-reaching importance.

The Bulletin describes "recognition and endorsement of the Official Used Car Guide as a most important first step toward obtaining an effective, practical method of used car control, to eradicate used car losses." It also says that the Association's progress in securing recognition and endorsement for the Guide marks a new epoch in the history of the automobile business. The Bulletin goes on to say that it is the first time dealers and manufacturers have joined in establishing a standard of used car value, and in establishing a gauge by which anyone can determine whether a dealer is cutting new car prices. In addition, the Bulletin declares that "It is the first time since trading began that hope of a real nature appears to make possible, ultimately, the sale of a new car with trade-in on a comparable basis with a sale without a trade-in. Sales below cost may thus be measured and eventually stopped."

Ford to Stage Meetings in San Diego, Atlantic City

Two meetings, one for sales representatives and the other for parts merchandising and service managers, will be staged by the Ford Motor Co. Thursday and Friday, Sept. 5 and 6. The sales meeting will be held at San Diego, Calif., and the merchandising and service meeting at Atlantic City, N. J.

More than 500 sales representatives from all parts of this country and Canada are expected to attend the west coast affair. Two of the features of this meeting will be an address by W. S. Cowling, Ford sales manager, and a special concert by the Ford Symphony Orchestra in the Ford Bowl adjacent to the San Diego Exposition buildings. A breakfast meeting on Thursday, Sept. 5, at which W. J. Cameron of the Ford Motor Co. will speak, will be one of the principal features of the Atlantic City meeting.

Helen B. Mahoney

Mrs. Helen B. Mahoney, wife of John P. Mahoney, vice president in charge of manufacturing at the Bendix Products Corp., died Monday night at St. Joseph's hospital of injuries received in an automobile accident August 16. She was 53 years old. The accident occurred when Mrs. Mahoney was returning to South Bend with the family chauffeur from Long Beach on Lake Michigan, near Michigan City, Ind., and the car skidded and crashed into a tree. Besides her husband, Mrs. Mahoney is survived by three daughters and one son, all of South Bend. The family came to South Bend six years ago from Chicago.

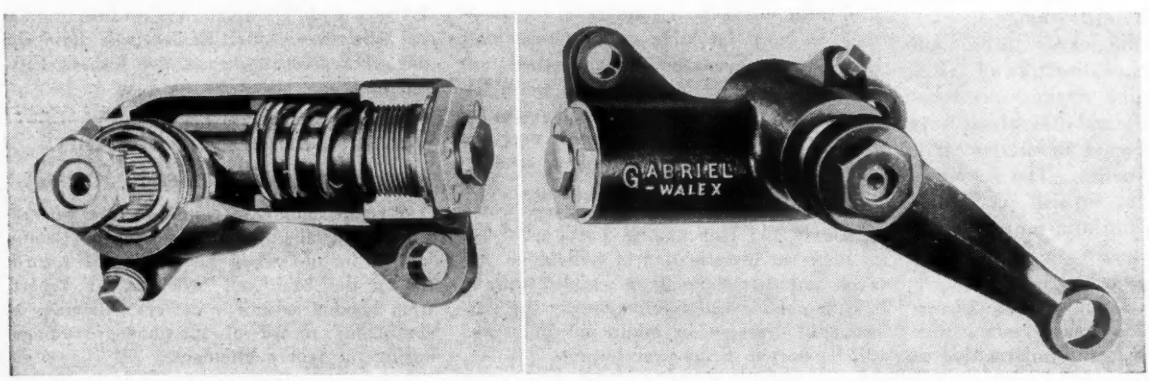
Harry E. Stitt

Harry E. Stitt, chief engineer of The Austin Co., engineers and industrial builders, until recently when he became consulting engineer after illness forced him to reduce business responsibilities, died in Cleveland Friday, August 23. He was under observation at Lakeside Hospital for a long-standing stomach ailment at the time of his death.

New Gabriel-Walex Shock Absorber

The illustrations herewith show outside and sectional views of the new Gabriel-Walex hydraulic shock absorber, to which reference was made in a recent issue of Automotive Industries. The feature of this shock absorber is that the hydraulic action takes place between a piston and cylinder which are combined in a self-contained cartridge that is fitted into the shock-absorber housing. The walls of the housing therefore are not subjected to high hydraulic pressures and the whole device is rendered leak-proof by the patented Gabriel gland packing. Adjustment is made by means of a screw-plug on the outside of the housing, and it is claimed that any requirements with respect to shock-absorber-action curve can be met. Adjustment is made at the factory, and the action of the shock absorber is not subject to seasonal influences. The cylinder is made of steel, to be able to withstand the high pressures to which it is subjected, while the piston is made of light alloy. The former is the movable and the latter the stationary member. Since the cartridge can be quickly removed from the housing the shock absorber can be readily inspected.

This shock absorber was developed in Germany, where it has been in service for some time, and John J. Batterman, president of the Gabriel Company, went abroad this summer to get a line on the service record of the device. He was so well satisfied that he made a contract with the inventors whereby the Gabriel Company secured the exclusive American rights



Sectional and external views of Gabriel - Walex shock absorber

Willys' Colorful Career in Automotive Industry Ends With Death from Stroke

by P. M. Heldt

John North Willys, whose rise to fame and fortune during the early years of the automobile was one of the most glamorous chapters in the whole history of the industry, died at New York City on August 26, following an illness of several months culminating in a stroke suffered two weeks ago.

Starting without capital and with no more education than the common schools of the country provide, he succeeded in building up an industrial organization that for many years ranked among the largest and most prosperous in the industry. While he met with reverses at various stages of his career, he always regained control of his principal interest, and at the time of his death he was still president of the Willys Overland Co., his first and greatest creation, although that company had been in receivership for more than two years.

Funeral services were held Wednesday at Mr. Willys' Riverdale, N. Y., home. The Rev. Dr. Roelif H. Brooks, Rector of St. Thomas Protestant Episcopal Church, read the simple Anglican service.

Honorary pallbearers were J. L. Replogle, A. J. Brosseau, Carl Shippe, Dr. Herman Baruch, Ward Canaday, David R. Wilson, H. C. Tillotson, H. J. Leonard, L. A. Miller and C. O. Miniger.

Mr. Willys was born in Canandaigua, N. Y., October 25, 1873, and therefore was in his 62d year at the time of his death.

After the turn of the century, when the bicycle boom had run its course, he became interested in automobiles, and obtained the local agencies for the Pierce motorette, the first model of what is now the Pierce-Arrow Motor Corp., and the Rambler, the predecessor of the Nash. In 1906 he organized the American Motor Car Sales Co. and took on the agency for the Overland, which was being made on a small scale in Indianapolis at the time. The car was of attractive appearance and low in price, hence it sold well, but it was next to impossible to get deliveries from the factory; so Willys made a trip to Indianapolis, and what he achieved there in the course of this visit forms one of the most interesting incidents of early automobile history.

It was during the depression of 1907, which had slowed up business in general and had forced a number of concerns in the new industry to the wall. When Willys arrived at the factory he found that the employees had gone on strike because they had not received any pay for weeks. It is related that he induced the hotel manager to cash his check for $350, a sum sufficient to satisfy the workmen and get things started again. Next, arranging for the necessary financial backing "down East," he took over and reorganized the Overland Company, settling claims against it at 50 cents on the dollar, of which 40 cents was in notes. He moved to Indianapolis and took over the management of the concern. In nine months he built 465 cars and raised the net worth of the company to $58,000.

One of the concerns that went under in the slump of 1907 was the American Motor Car Co., a subsidiary of the American Bicycle Company (the bicycle trust), which had manufactured a number of automobile lines. Its leading model was the Pope-Toledo, which was being manufactured in a mammoth former bicycle plant in Toledo. When the company failed, the Toledo plant was put up for sale, but because of its enormous size and the depressed condition of business, no offer was received for a long time. Finally John Willys bought the plant and moved the Overland company to Toledo. The price paid is reported to have been $285,000.

The Overland business grew rapidly and the plant, originally much too big for the

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John North Willys

Willys Death Will Not Alter Reorganizing Plans

Death of John North Willys, president and co-receiver for the Willys-Overland Co., may have some effect upon the proposed reorganization of the company now nearing a climax. However, close associates of Mr. Willys believe that his work will be carried on.

It is felt in Toledo that the plan of Mr. Willys may be largely carried out by his successors due in part to their actual interest in the receivership estate and the opportunity presented to carry out his last business objective.

There will be no halt in the reorganization plans now under development, at least. This much has been revealed by those close to the receivership and creditors' group.

"You Are Working for Me" Willys Told NACC Board

Home from Warsaw on a visit during the time he was Ambassador to Poland, Mr. Willys spent the morning of his first day in this country in the downtown financial district of New York. In the afternoon, he went uptown to attend a meeting of the board of the NACC, of which he was still a member.

Entering the meeting at which, it is said, were such automotive giants as Alfred P. Sloan, Jr., Walter Chrysler, C. W. Nash, and others, he announced that he had been down on Wall Street during the morning making some investments, including the purchase of a variety of motor stocks.

"Now," he continued according to the story, "all you fellows are working for me and I expect you to be on the job every morning at 8 o'clock."

Chevrolet Adopts New Rustproofing Process

The first commercial application of a new rustproofing process has been made by Chevrolet with the installation of special equipment for the "cromodizing" of fenders, running boards, and other sheet metal parts. The process differs from others used in the automotive industry, in that the rustproofing is accomplished as the parts pass on a conveyor through a series of spray booths, and the treatment, instead of forming a coating over the surface, combines with the metal and changes it chemically to form a rustproof surface. The process is said to double the life of fender finish.

Numerous manufacturing advantages, and extra benefits to car owners, are claimed for the new process, which was developed by the Chevrolet manufacturing department in conjunction with the laboratories of the American Chemical Paint Co. and tested by the GM Research Laboratories. Since the treatment of the sheet metal is the last step before the enameling of the parts, the cromodizing equipment is installed at the assembly plant. The new Baltimore assembly plant was the first of Chevrolets ten plants in the United States to be equipped for the cromodine process. No announcement of the new process was made at the time, pending its adoption for use in all of the company's assembly plants.

Operations on 10,000 Willys Begins Sept. 3

Forge shop operations will begin Sept. 3 at the Willys-Overland plant in Toledo on the new order of 10,000 cars recently authorized by the Federal Court. The cars should be finished by Oct. 14, David R. Wilson, receiver, said. About 500 workmen will be recalled and the force gradually built-up to about 3000 by October.

Export sales were reported to be eight per cent greater than for the entire year of 1934, according to Mr. Wilson.

FDR Asks Congress to Formulate New Law on Hours, Wages, Trade Practices

Re-establishment of federal control over wages, hours and trade practices, presumably within the constitutional limits set by the Supreme Court, has been placed on the legislative agenda for the next session of Congress.

In identical letters to Senator Harrison and Representative Doughton, the President last week recommended that the staffs of their respective committees analyze pertinent data so that hearings can be held in the fall and legislation formulated for "preserving permanently to the nation such social and economic advantages as were gained through previous emergency legislation." Pending determination by Congress whether further legislation will be enacted, the President also urged that industry subscribe to voluntary agreements covering wages, hours, 7a and unfair trade practices offending existing law, pointing out that such agreements, if approved, would be exempt from the anti-trust laws.

During the absence of Congress, the President revealed in his letter that he plans to confer with management, labor and consumers on legislation designed to accelerate recovery and eliminate unemployment.

In support of his suggestion that Congress consider further legislation, the President said that while many employers were maintaining employment standards, there was a serious tendency to impair them by a minority. He transmitted certain data substantiating this contention and promised more.

To develop data along this line, NRA has already announced a survey of retailing as reported elsewhere in this issue. Another study of major industries including steel and automobiles, also has been started. This latter study, in the case of the automotive industry, will be headed by George Myrick of NRA and he will be assisted by Messrs. Roberts, Delaney, Moody and Orr. The study will be divided into four sections—vehicle manufacturing, parts manufacturing, wholesaling and retailing. Plans have not been developed sufficiently to indicate the scope of the study but it is understood that it is intended to develop a factual picture of the industry. Nothing in the nature of the Henderson report is contemplated.

Subsequent to his letter, the President released a statistical report prepared by NRA of departures from former code standards. A total of 9049 violations were covered divided as follows: hours, 5567; wages, 1019; wages and hours, 2463, and price-cutting, 2490.

These violations were classified into a number of trades and industries of which motor vehicle retailing, and automobile repairing and servicing, are of automotive interest. In the dealer field, the report showed 195 violations of hours provisions, 86 of wages standards, 117 of wages and hours, and 154 of price-cutting. Before the codes were wiped out, NRA would probably have found no difficulty in finding at least as many violations as these figures show and certainly a great many more in the case of price cutting. Of course, the figures are intended to make a case for NRA control so perhaps it is not surprising to find in the report 43 instances of price cutting in the auto repair and servicing trade although the price control provisions of this code were never in effect, having been stayed by the order approving the code. How there could be violation of code price standards when the code didn't establish them, is not clear.

Prior to the President's letter, Senator Wagner, in a speech defending the New Deal in the Senate, tipped the administration's hand. He gave a four point program: a federal law regulating maximum hours and minimum wages; ratification of the child labor amendment to the Constitution; perfection of the social security program, and continuation of public works until private industry provides employment.

Four American, 2 Canadian Boys Win GM Scholarships

Four American and two Canadian youths were awarded $5000 university scholarships in the 1935 Fisher Body Craftsman's Guild master model coach building competition. This brings the total to 45 boys who have received scholarships since the inception of the Fisher-sponsored educational foundation in 1930. William A. Fisher, Guild president and GM vice president, made the awards. The presentations were made at the Chateau Frontenac, Quebec.

The boys are John Imbody, Marion, O.; Francis Gadd, Spokane, Wash.; Robert M. Rasmussen, Regina, Sask. All are 15 years old and in the junior division. The senior division winners are Kenneth Jensen, 19, Metuchen, N. J.; Ralph H. Munson, 20, St. Paul, Minn., and Mervyn P. Reilly, 20, Medicine Hat, Alta.

A large group of American educators and men prominent in boys' work including Daniel Carter Beard, national Boy Scout commissioner, was present at the ceremonies. General Motors officials who attended included R. H. Grant, vice president; R. S. McLaughlin, president, GM of Canada and head of the Canadian Guild section; H. A. Brown, vice president and general manager, GM of Canada; William S. McLean, Guild secretary; H. J. Klingler, president and general manager of Pontiac.

Fiat Has New Small Model Reminiscent of Willys 77

The Fiat Company of Italy is bringing out a new small car model which is being heralded in the Italian press as the "vehicle of tomorrow." Very few details have as yet been made public. The six-cylinder engine, which apparently has a displacement of 1500 cu. cm. (91.5 cu. in.), is said to develop 43 hp., and the maximum car speed is given as 72 m.p.h. Independent springing is used at the front, by means of oscillating arms. There is an unusual amount of slope to the radiator, while the slopes of the windshield and of the rear panel are moderate. Headlamps are sunk in the front fenders, a good deal like the Willys 77, and the carrying of the spare tire in a depression of the rear body panel is also reminiscent of the Willys.

August Output of Seaman Body 50% Above Year Ago

Production at the Seaman Body Corp. plant in Milwaukee in August is running 50 per cent ahead of the like period of 1934, according to Harold H. Seaman, president. The company's entire output is devoted to Nash and La Fayette cars.

Fisher Body Craftsman's Guild university scholarship winners for 1935. Standing, from left to right, are Edwin C. Hill, radio news commentator; the six award winners—Kenneth Jensen, Metuchen, N. J.; Ralph H. Munson, St. Paul; John Imbody, of Marion, O.; Francis Gadd, Spokane; Mervyn P. Reilly, Medicine Hat, Alta., and Robert M. Rasmusson, Regina, Sask.; W. S. McLean, secretary of the Guild and director of advertising, Fisher Body. Seated are R. S. McLaughlin, president of the Canadian section of the Guild and of GM of Canada; Dr. J. E. Gregoire, Mayor of Quebec; E. L. Patenaude, Lieutenant-Governor of Quebec; W. A. Fisher, American president of the Guild and GM vice-president, and R. H. Grant, GM vice-president.

Irving B. Babcock

whose election to the presidency and general managership of the Yellow Truck and Coach Manufacturing Co. was reported in Automotive Industries last week. He succeeds Paul W. Seiler, resigned

Analysis Disproves Economy of Wood Gas as Motor Fuel

Although much propaganda is being made in Germany in favor of the use of wood gas as motor fuel, the situation is not viewed very hopefully by local experts, according to a report to the Department of Commerce from Consul Sydney R. Redecker, Frankfort-on-Main. Claims by its advocates that economies of from 80 to 90 per cent on fuel costs can be realized by the use of wood gas are disproved by an analysis. If the high import duty of around 60 per cent of the retail price imposed upon gasoline were removed, or if the comparison is made not with gasoline but Diesel oil, the economy advantage of wood-gas is shown as practically nil.

The first objection to wood-gas is, of course, the high initial cost and bulk of the requisite generator equipment, coupled with the inconvenience, delays in starting the motor, and necessity for frequent cleaning of the generator, not to mention the fuel's reduced efficiency, important especially in the hilly regions. It is estimated that the cost of operating a five-ton truck by wood-gas (including cost of fuel, four-year amortization of the investment, repairs, etc.) is about 6.16 marks per 100 kilometers, and by charcoal-gas 9.26 marks. In comparison, a five-ton truck using gasoline costs 21.08 marks per 100 kilometers, equivalent to a theoretical saving for wood of 71 per cent and charcoal 66 per cent, not allowing for the larger payload capacity and other operating advantages of the gasoline vehicle. However, the important point is that this "saving" is fictitious and due entirely to the high consumer price of gasoline caused by taxation; if the high fiscal charges were removed, the cost of gasoline, based upon the wholesale duty-free value, would be only around 7.36 marks per 100 kilometers, compared with 6.16 and 9.26 marks for wood and charcoal respectively. These price differences, of course, do not take into account the higher operating costs due to loss of time and inconvenience in cleaning and charging the gas generator, loss of one-fifth in payload capacity, etc.

Lane Scores Factory Practices at FTC Hearing on NADA's Trade-in Proposals

A proposal to perpetuate the motor vehicle retailing code principles of used car allowance control was placed before the Federal Trade Commission last week in Washington at a preliminary meeting at which J. Reed Lane of the staff of the National Automobile Dealers Association represented that association. The meeting was the first formal step in the NADA effort to secure a voluntary agreement incorporating these principles which the FTC would enforce.

In his presentation, Mr. Lane said that both manufacturer and consumer would benefit by the elimination of the sort of competition the proposals were designed to curb. He criticized the factories for packing in dealers, for the appointment of low-grade, under-capitalized dealers, for not protecting dealers better in clean-ups, and for failing to aid the dealer in solving the used car problem, particularly for not supporting the code. He also said that the welfare of the dealer was entirely at the mercy of the manufacturer. After quoting criticisms of the factory-dealer relations in the Henderson report, he described this report as the first unprejudiced survey of the industry. He also devoted considerable attention to the question of whether the retail sale of new cars directly affects interstate commerce directly enough to warrant federal control.

Liquidated Damages

Mr. Lane's presentation got a sympathetic hearing from the representatives of the Commission. They seemed to be particularly impressed by the references to new car bootlegging, the mortality rate among dealers and the need for some sort of legally sanctioned control. In addition to the proposals summarized below, it is understood that Mr. Lane was asked to present a draft of a liquidated damages program. The advisability of wage and hour provisions was also touched upon.

Although the used car allowance control is the keystone of the program, some doubts were expressed following the meeting that it would secure approval, the feeling apparently being with this exception, the program had a good chance of being accepted.

Briefly the proposals made by the NADA would establish the following competitive standards:

Dealers would be required to maintain delivered prices on new cars, except that employees and members of the dealer's or an active officer's family might be sold at a discount provided the sale is registered with the NADA; the purchaser has retained possession for not less than 90 days following such registration; the purchaser has given the vehicle at least 1500 miles of usage; the dealer has supplied the NADA with an affidavit that these conditions have been met, and the NADA has authorized the reduction in writing. Substantially the same provisions cover the sale of demonstrators except the minimum mileage is 4,000.

On clean-up cars, the proposals provide that with the approval of the manufacturer concerned, the NADA may sanction reductions and specify the maximum amount thereof.

Dealers would be forbidden to allow more than the fair market value of used cars accepted in trade. Fair market value is to be determined from sales reports covering the better grade of used cars. In the case of models for which the fair market cannot be determined from sales reports because a sufficient number are not available, the NADA would make a reasonable determination of that value which would be submitted to about 10 per cent of the dealers handling the particular make in each trade area for comment and criticism in the light of which the final value would be set. These values would be published in the Official Guide Book and would constitute, less unspecified percentages for selling and handling, the top allowance. Fair value of models not included in the Guide would be established by formula.

Rules on Future Deliveries

On orders for future delivery on which at least a 5 per cent cash deposit is made, the dealer can allow the amount permitted by the current Guide, but delivery must be made before the next succeeding Guide becomes obsolete. Such future delivery contracts must be filed with the NADA.

Dealers would be permitted to sell used vehicles for owners if they do not take title nor accept any liability, but would be required to deduct an unspecified percentage to cover costs and expenses.

The purchase and sale of motor vehicles for resale in a territory already enfranchised for that make would be unfair competition.

Dealers would be required to connect speedometers and keep them connected on new vehicles.

Dealers would be required to advertise truthfully.

The question of finance charges is not touched upon in the proposals although it was covered in the code.

Lichter to Supervise Hupp Body Division

Adolph Lichter, formerly superintendent of the body division of Chrysler Corp. and later member of the Citroen Staff in Paris, has been given complete charge of the body division of Hupmobile. Mr. Lichter's earlier experiences were with Brewster & Co., Stevens-Duryea, Rubay Company, Willys-Overland and Joyce Mfg. Co.

Fitzpatrick Joins Algoma

James R. Fitzpatrick has been appointed director of sales of the Technical Division of the Algoma Plywood and Veneer Company with headquarters for sales, research and engineering service in the Builders Building, Chicago, Ill. Mr. Fitzpatrick formerly was vice-president of Haskelite Manufacturing Co.

Jobber Processing Makes Parts Subject to Federal Excise Tax

Processing operations on automotive parts and supplies performed by wholesalers constitute manufacturing and the subsequent sale of such parts is subject to the federal excise tax, the Treasury Department has indicated in a letter to the national code authority of the wholesale automotive trade.

The Department says that "Any person who manufactures an automobile part or accessory and places such article in stock for sale on demand or for future use in connection with a repair job is liable for the tax upon his sale or use thereof. Any person who manufactures an automobile part or accessory for immediate use in connection with a repair job incurs no tax liability upon his disposition of the article in that manner."

In passing on specific points, the Department held that brake lining sold in rolls or in bulk was not subject to tax, but that when a jobber cuts it into lengths to fit a particular car, it is taxable manufacturing. However, if a repairman buys brake lining in rolls or in bulk, and cuts it up to fit cars as he repairs them, it is not taxable manufacturing. But brake lining segments or sets supplied by the manufacturer are taxable. Cutting rubber hose and copper tubing to fit particular cars also constitutes taxable manufacturing. The same is true of cutting ignition cable, rebabbitting connecting rods, rewound armatures, flywheel ring gear exchanges, etc.

The Department's rulings were made in response to a letter from the code authority stating that efforts were being made to apply the excise tax to certain phases of jobber operations and that these efforts were outside of the intent of the law as well as being a nuisance. The code authority also expressed the hope that the Department would create a yardstick to measure the extent of activities before the tax is applicable, particularly because of the difficulties facing wholesalers in segregating taxable operations and the costs of collection to the government. This, the Treasury Department's letter indicates, the government would not do.

Workers Split on Set-Up

(*Continued from page 247*)

well as the production workers. But, said Mr. Green, if craft unions don't want to merge, they can't be forced to. "It is alright to say on paper that unions be put together, but try and do it. It is necessary to consider the individual cases of those unions. Some members have been paying into sick benefits and other funds most of their lives. They have a property interest there."

These are the controversial points that caused a secession from the A. F. of L in June last year of a substantial group, principally Hudson Motor workers, who later formed an independent union known as the Associated Automobile Workers of America, and observers are inclined to the belief that the same issues will exclude other groups from membership in the new union or cause defection in the ranks later.

The AAWA became the nucleus of the newly formed Brotherhood of Allied Automobile Organizations which adopted its constitution last Sunday. This organization is a federation of independent unions in the motor industry and largely is an outgrowth of the Officers Association of Automobile Industrial Employees composed of officers of the bargaining agencies elected at the Automobile Labor Board elections last spring. The "Brotherhood" creates a central body in which several autonomous unions are brought together, chief of which are the AAWA and the Automotive Industrial Workers of America, a union growing out of the Wolman board's bargaining agency at the Dodge plant. These two unions alone are said to have some 40,000 members, most of which are in the Detroit area, a membership in excess of that claimed by the Federation. Complete autonomy of action for its component unions characterizes the new "Brotherhood" organization.

New Brotherhood Objects

Its object, according to the preamble of its constitution, "Shall be to centralize the thoughts and actions of all its affiliates and to harmonize these for the improvement and advancement of the workers of this industry, so that through an alliance and confederation of our ideals and efforts in a spirit of reciprocity and unison, meeting on one common ground, we may achieve and acquire the rightful station which is our inalienable right."

Officers are Tice W. Woody, of Pontiac, employee of GM Truck, president; Joseph E. Fogerty, of Detroit, Cadillac worker, first vice president; F. J. Kaiser, of Detroit, Chrysler worker, second vice president, and Arthur E. Greer, of Detroit, Hudson worker, secretary and treasurer.

Like ancient Gaul of Caesar's time, organized labor in the motor industry appears to be divided into three parts. That is, the third part will be organized if Father Coughlin carries out his plan to elect officers and set up an organization of automobile workers at his mass meeting on Belle Isle next Sunday, the day preceding the A. F. of L. rally there. Frank X. Martel, president of the Detroit and Wayne County Federation of Labor, called the Coughlin plan a "mischievous program," in a talk before the UAW convention. But those who have been in close touch with the priest's plans declare that in spite of his earlier announced intentions to organize automobile workers, he does not contemplate forming a separate union, but is merely promoting organization work generally. In fact his chief supporters are said to be the Dodge union which is a member of the newly formed "Brotherhood."

There were 250 delegates seated Monday at the opening of the convention representing 66 or the 172 UAW locals which the Federation claims have been organized.

According to the report made to the convention by F. J. Dillon, general organizer, there are at present 35,000 dues paying members composing 148 local unions embracing a territory covered by 14 states. Since automobile and parts plants have roughly 400,000 employes, the AFL membership amounts to less than 10 per cent of the total.

Mr. Dillon's report further stated that the AFL spent $36,049 in its efforts to unionize the automobile industry between October 14, 1934, and June 29, 1935. This is the period in which the work was directed by Mr. Dillon who succeeded William Collins as organizer. The amount covers expenses of the Detroit office, salaries of Mr. Dillon and his three assistant organizers, expenditures for organizing work by National Council members of the UAW in other cities, expenditures to assist Detroit locals and other items. Mr. Dillon received $4,292 as salary and expenses during the eight and a half months covered by the report, which amount did not cover his entire expenses, part of which was included in other items. The total amount expended by the Detroit office was advanced by the American Federation of Labor.

Car Sales Up 43%, Trucks 32% in First Seven Months

CARS

	July, 1935	June, 1935	July, 1934	Per Cent Change 7 Mos., 1935 over 1934
Auburn	522	495	602	+ 22
Buick	6,700	6,758	7,951	+ 5
Cadillac	457	529	400	+ 6
Chevrolet	71,226	66,054	67,026	+ 14
Chrysler	4,542	4,778	3,257	+ 75
DeSoto	3,057	2,917	1,372	+147
Dodge	18,951	18,693	10,031	+ 95
Ford	83,203	83,273	63,205	+ 60
Graham	1,763	1,728	1,532	+ 18
Hudson	2,081	2,192	1,930	+ 6
Hupmobile	727	724	694	+ 49
Lafayette	1,872	1,264	1,410	+129
LaSalle	1,101	1,403	593	+102
Lincoln	129	159	160	— 13
Nash	2,081	2,144	1,216	+ 8
Oldsmobile	15,632	16,421	9,197	+121
Packard	4,259	4,313	841	+380
Pierce-Arrow	87	80	220	— 60
Plymouth	40,674	40,263	38,289	+ 27
Pontiac	15,208	14,978	8,618	+ 80
Reo	365	411	467	— 1
Studebaker	3,913	3,966	4,748	— 10
Terraplane	5,454	5,704	4,209	+ 28
Willys	1,157	1,062	946	+ 46
Miscellaneous	34	51	93	— 63
Total	285,195	280,360	229,006	+ 43

TRUCKS

	July, 1935	June, 1935	July, 1934	Per Cent Change 7 Mos., 1935 over 1934
Autocar	99	73	99	— 21
Brockway	114	113	147	— 16
Chevrolet	18,608	17,576	14,704	+ 12
Diamond T	593	572	457	+ 18
Dodge	5,336	4,911	4,224	+ 30
Federal	202	178	182	— 1
Ford	18,073	17,385	12,492	+ 56
G.M.C.	857	901	951	— 7
Indiana	103	38	44	+ 38
Internat'l	5,308	4,710	2,548	+ 67
Mack	147	103	202	— 28
Reo	439	439	416	+ 3
Studebaker	219	218	156	+ 31
White	233	220	352	— 34
All Others	912	806	516	+ 45
	51,243	48,243	37,490	+ 32

Retail Sales Decline as New Season Nears

(*Continued from page 247*)

cent from the July volume of just over 310,000 units. Because of mid-year reductions in license fees in some states, registrations ran about eight per cent higher than actual sales. Complete returns for July, according to R. L. Polk's compilation, show registrations of 285,195 passenger cars and 51,243 trucks, a total of 336,438 units. July passenger car registrations were up 1.72 per cent over June and 24.54 per cent over July last year, bringing the total for the first seven months of this year to 1,747,135 cars, which compares with 1,224,561 for the similar 1934 period. Bigger gains were shown by truck and commercial car registrations which advanced 6.22 per cent over June and 36.68 per cent over July last year. The seven months' total of 305,306 units compared with 232,234 in the 1934 period.

Production is down to a new low for the year and it appears that September will show smaller output than anticipated earlier. Many plants will be feeling their way along on 1936 models, starting early in the month, but will not attain sizeable operations until well into the month and real volume will not be reached until October. One large producer crowded considerably more units into August than was originally planned so as to be able to cut off early in September to prepare for new models. The result is that August output of the industry may go well above the 200,000 units previously estimated at the expense of September, which it now appears will do well to exceed the 1934 low of 80,162 units reached in November when plants were changing over to new models.

Plymouth

Retail deliveries, week ending Aug. 24, 7013 cars. . . . Compares with 7565 in preceding week. . . . Year-to-date total, 280,748 cars, a 25.6 per cent gain over corresponding period last year.

Pontiac

Second 10-day period of August, 3198 deliveries. . . . Total for first 20 days of month, 7144, which compares with 1913 and 3992 in comparative periods last year.

Chrysler

Retail deliveries, week ending Aug. 24, 742 cars. . . . 30,689 cars delivered in first 34 weeks of year. . . . Total thus far close to grand total for 1934.

DeSoto

Sales for first 34 weeks of year 18,796 cars. . . . Gain of 154.7 per cent over similar 1934 period. . . . Week ending Aug. 24 deliveries totaled 536 against 549 in preceding week.

New Device Squirts Anti-Skid Liquid on Tires

A new anti-skid device is being demonstrated in Detroit at present by J. van der Voort. It is the invention of Walter Josky of Hamburg, Germany. It comprises a small foot-operated pump which, as the brake is being applied, squirts a quantity of a special liquid onto the tire treads. The liquid is said to be water-soluble and most of it is washed off the tires when the latter come in contact with wet road surface, but what remains on the tires is said to give them as firm a grip on the road surface as they have in dry weather. In dry weather when there is no danger of skidding, the pump is turned off. Each shot of liquid is said to give protection against skidding for 100 yards. The device is said to have been tried in road tests in Germany on all kinds of pavements and is covered by two U. S. patents.

Ford Expenditures to Total $32,000,000

The expansion and modernization program at the Rouge plant of the Ford Motor Company which was tentatively planned a year ago to cost about $20,000,000, will ultimately cost more than $30,000,000. Further expansion and construction in Henry Ford's "little industries" will boost total expenditures to nearly $32,000,000. The entire program is expected to be completed by the summer of 1936.

Motor World Studies Revised Steel Extras

Output Rate Improves; Up-Trend Expected to Continue for 2 Months

While the American Iron and Steel Institute reported this week's operating rate of the steel industry at 47.9 per cent of ingot capacity, a decline of about 2 per cent from the preceding week's rate, the steel market had recourse to even brighter colors to paint the outlook.

From the Middle West came unqualified predictions that the upward trend of demand would continue uninterruptedly for the next two months and possibly over the entire remainder of the year. As though with less than one half of its ingot capacity and at best not more than two-thirds of finishing capacity engaged, the steel industry could not step up production the moment sufficient demand made itself felt, there was even talk of "steel production lagging behind demand."

What interested automotive consumers more than this grossly exaggerated picture of the improvement that has unquestionably taken place in the steel market, was the new list of extras issued by a leading producer of cold finished steel bars, effective Aug. 26. The upward revision of extras results largely from the higher cost of hot rolled steel bars. The price for smaller lots than 500 pounds has been marked up to take care of the extra expense entailed in the handling of such small quantities. Finishers say that within the last two years their production costs have increased by approximately 50 per rcent, but that while there have been advances to offset the higher costs in other steel products, their prices remained stationary and that, therefore, what revision was made in the list of extras was fully justified, this all the more so as the spread between the cost of the hot rolled and the price for cold finished bars yields only $3 per ton for conversion.

Spicer-Union Agree on Wage Rise, 40-Hr. Week

A new working contract offered by the Spicer Manufacturing Co. was voted into effect immediately by the members of the United Automobile Workers' Union employed at the Spicer plant, last week. The new contract, effective as of August 1, runs for a year and includes a wage increase and a 5-day, 40-hour week.

Eckelman New K & T Advertising Manager

Leon Eckelman has joined the Kearney & Trecker Corp. as advertising manager, company officials announce. Previously Mr. Eckelman was associated with the Perfex Radiator Co. as sales engineer.

CALENDAR OF COMING EVENTS

SHOWS

Machine Tool Show—Cleveland..Sept. 11-21
New York Automobile Show, New York, Nov. 2-9
Baltimore Automobile Show .....Nov. 2-9
Detroit Automobile Show .....Nov. 9-16
Buffalo Automobile Show .....Nov. 9-16
Newark Automobile Show .....Nov. 9-16
Cincinnati Automobile Show ....Nov. 10-16
Pittsburgh Automobile Show.....Nov. 11-16
Philadelphia Automobile Show..Nov. 11-16
Chicago Automobile Show.....Nov. 16-23
Minneapolis Automobile Show....Nov. 16-23
Columbus Automobile Show ....Nov. 22-28
Cleveland Automobile Show ....Nov. 23-30
Montreal Automobile Show .....Nov. 23-30
Kansas City Automobile Show, Nov. 30-Dec. 6
Automotive Service Industries Show—Atlantic City .....Dec. 9-13

CONVENTIONS AND MEETINGS

S.A.E. National Production Meeting, Cleveland .....Sept. 18-19
National Industrial Advertising Association, Pittsburgh .....Sept. 18-20
American Transit Assoc., Bus Division, Atlantic City .....Sept. 23
National Assoc. Sales Finance Cos.—White Sulphur Springs .....Sept. 26-28
American Society for Metals, Annual Meeting—Chicago .....Sept. 30-Oct. 4
American Welding Society, Chicago, Sept. 30-Oct. 4
Empire State Automobile Merchants Association, Albany, N. Y. ....Oct. 8-9
S.A.E. Transportation Meeting, Chicago .....Oct. 10
S.A.E. National Tractor Meeting, Chicago .....Oct. 10-11
National Safety Council, Louisville, Ky. .....October 14-18
American Trucking Associations, Inc., Chicago .....Oct. 14-15
American Gas Association — Atlantic City .....Oct. 14-18
Industrial Materials Exhibit, Hotel Astor, New York .....Oct. 21-25
Los Angeles .....Nov. 2- 9
S.A.E. Annual Dinner, New York....Nov. 4
Newark, N. J. .....Nov. 9-16
American Petroleum Institute — Los Angeles .....Nov. 11-14
Philadelphia .....Nov. 11-16
International Acetylene Association, Cleveland .....Nov. 12, 13, 15
Baltimore .....Nov. 2-9
National Industrial Traffic League—Chicago .....Nov. 20-21
Columbus, Ohio .....Nov. 23-28

Business in Brief

Written by the Guaranty Trust Co., New York, exclusively for Automotive Industries

Business activity increased further last week, with most leading branches sharing in the expansion. The majority of the more important industries increased their rates of output, and wholesale and retail dealers reported further gains in demand. Some commodity markets were rather unsettled in the latter part of the week as a result of the Government's announcement of a 9-cent cotton loan policy to supplant the 12-cent loan offered in the past.

Guaranty Trust Indexes

The index of business activity of the Guaranty Trust Company for July stands at 70.8, as against 71.2 for June and 66.3 for July, 1934. The company's wholesale price index for August 15 stands at 52.9, as against 53.9 a month earlier and 53.2 a year earlier.

Freight Loadings Rise

Loadings of revenue freight for the week ended August 17 totaled 615,006 cars, showing a gain of 31,263 cars, or 5.4 per cent, from the total for the preceding week, a rise of 13,218 cars, or 2.2 per cent, from that for the corresponding period last year, and a decline of 28,400 cars, or 4.4 per cent, from that for the similar week in 1933.

Current Output at Peak

Production of electricity by the electric light and power industry for the week ended August 17 was the largest reported in about five years. It exceeded the total for the corresponding period last year by 9.5 per cent, as against 9.7 per cent a week earlier, 9.9 per cent two weeks earlier, and 8.3 per cent three weeks earlier.

Construction Volume Gains

Construction contracts awarded in July exceeded the monthly volume reported for any other month since March, 1934, when the awarding of contracts by the PWA was at its peak. The July total for 37 States, according to the F. W. Dodge Corporation, was $159,249,900, as against $148,005,200 in June and $119,662,300 in July, 1934.

Sales of ordinary life insurance in the United States in July continued to run approximately equal to those a year ago. Sales for the twelve months ended July 31 were slightly larger than those during the preceding twelve-month period.

Large Crude Production

Average daily crude oil production for the week ended August 17 amounted to 2,708,650 barrels, considerably exceeding the 2,600,600 barrels calculated to be the total of the restrictions imposed by the various oil-producing States during August. Production during the preceding week averaged 2,656,850 barrels, and that a year ago 2,518,700 barrels.

Fisher's Index

Professor Fisher's index of wholesale commodity prices for the week ended August 24 stands at 84.6, as against 83.7 a week before, 83.1 two weeks before, 82.9 three weeks before, and 82.6 four weeks before. The current average is the highest of the year to date and the highest since the week ended July 6, 1930.

Federal Reserve Statement

Federal Reserve bank credit outstanding decreased $9,000,000 during the week ended August 21. Monetary gold stock increased $5,000,000, money in circulation $16,000,000, and member bank reserve balances $37,000,000.

Hadley Calls Horn the Jekyll and Hyde of Car

Likening the modern automobile horn to the fabled characters of Dr. Jekyll and Mr. Hyde, N. F. Hadley, Plymouth's chief engineer, cites four occasions when a driver should use his horn. They are to warn another driver of intention to pass; to warn a careless pedestrian; at "blind" intersections, and to warn an approaching driver that he is over the center line.

Mr. Hadley said the horn in the hands of careful drivers "is a kindly Dr. Jekyll, aiding other motorists and pedestrians. Careless, unthinking drivers abuse the privilege given to them with their horns. They substitute blasts for brakes as they crash through traffic. In their hands, the automobile horn is a vicious, snarling Mr. Hyde." Mr. Hadley recommends all drivers be instructed in the proper use of the horn.

Met Section Chairmen Named by Winchester

J. F. Winchester, chairman of the Metropolitan Section of the Society of Automotive Engineers, has completed the appointment of all committee chairmen and committees for the coming season. He will be assisted by vice chairmen O. P. Liebreich, Charles Froesch (Aero.), George E. Gray (T & M), E. C. Blackman, treasurer; L. M. Porter, secretary; S. G. Harris, past chairman; committee chairmen J. A. Anglada, regulation and legislation; Lowell H. Brown, noon-day luncheon; F. C. Horner, research and safety; W. E. John, publicity; H. K. LaRowe, membership; T. C. Smith, employment; W. S. Peper, program; L. M. Porter, advertising; activity chairmen C. H. Baxley, student; A. E. Becker, Diesel engine; Herbert Chase, passenger car and passenger car body; C. M. Larson, fuels and lubricants, and G. Hotchkiss, editor, accelerator.

An extensive program of activities is planned starting in September. The members of the section and their guests will gather at the Westchester Country Club, Rye, N. Y., on Friday, Sept. 20, for golf and bridge in the afternoon. In the evening there will be a dinner-dance.

L. J. Martin Succeeds O'Neill as NRA Head

Laurence J. Martin of Virginia was appointed Acting Administrator of the National Recovery Administration by the President in an executive order last Saturday. He succeeds James L. O'Neill, resigned. Mr. Martin has been associated with NRA since Aug. 14, 1933 and on July 3 this year was appointed executive officer. He was made special assistant to the Deputy Administrator of Division 2 (equipment), when he first come to NRA. Subsequently he served as assistant deputy in the same division, Deputy Administrator and chief of the compliance division. From 1927 to 1932, Mr. Martin was superintendent of textile production of Tubize-Chattillon, Hopewell, Va., and later was an exporter and importer at Seattle, Wash.

Canada May Rescind 20% Discount for Duty Rule

The Canadian government is reported to be considering rescinding its 1931 order-in-council increasing valuation of automobiles for duty purposes. This order provided that no greater discount could be allowed for duty purposes on imported cars than 20 per cent. Should this order be removed the regular home discount, which runs higher, would be allowable for duty purposes.

Shuler Axle Co. Elects J. P. Potter President

John P. Potter has been elected president of the Shuler Axle Co., Louisville, Ky., succeeding W. E. Dugan, resigned. Mr. Potter will devote himself to the financial phase of the business.

A. W. Lissauer, president and treasurer of the Louisville Drying Machinery Co., was elected vice president and will act in an advisory capacity in the manufacturing departments. H. R. Silver, Shuler engineer for 30 years, was reelected secretary, and G. A. Dougherty was named assistant secretary.

Service Equipment Makers Consider Own Finance Cos.

The most practical way for service station equipment manufacturers to take advantage of the willingness of the Federal Housing Administration to guarantee 20 per cent of loans in connection with the instalment sale of such equipment is for such manufacturers to organize their own finance companies to handle the paper, is reported to have been the conclusion reached by about 15 automotive shop equipment manufacturers who met last week in Washington with the FHA.

It is understood that the manufacturers went to Washington with the thought of forming a cooperative finance company to handle such paper. This move was contemplated to meet the situation that developed when it became apparent that the banks were not generally receptive to such paper even with the 20 per cent FHA guarantee. The regular finance companies also are said to be similarly cold to the proposition for one reason because paper guaranteed by FHA is limited to a five per cent discount which was not attractive to the finance companies.

However, since it was felt that each manufacturer should contribute to the capital of the cooperative company in proportion to the use that he made of it, the conclusion reported to have been reached was that each manufacturer might just as well organize his own company for the purpose. It is stated that such companies can handle $6 of business for every dollar of capital. It was not indicated, however, whether it is expected that finance companies organized by individual manufacturers will operate at a profit at the five per cent rate which the regular finance companies apparently regard as unprofitably low.

United Chromium Develops Improved Stop-Off Lacquer

A new, improved stop-off lacquer for chromium plating has been developed by United Chromium, Inc., New York, and is being marketed under the trade name "Unichrome Resist." It is claimed to be an excellent electrical insulator, to resist chemical attack by the various acids and rinse waters used in the plating process, to flow readily, air-dry quickly, and have good adhesive properties, besides being reasonably tough and ductile. The lacquer is readily removable by means of a solvent, and is easily applied by brushing, spraying or dipping. When in contact with the chromium plating solution it does not yield any products that might contaminate the solution. Finally, the lacquer is non-toxic.

More Widespread Use of Aluminum Pistons Forecast

The prediction is made by David E. Anderson, chief engineer of the Bohn Aluminum and Brass Corporation, that the percentage of passenger-car models carrying aluminum pistons will be materially increased in 1936. From the way things look at present, there will be only two cars with cast iron pistons on the market next year. As to the reasons for the change, Mr. Anderson points out that owing to improved streamlining, car weights have gone up materially, in some cases as much as 300 lbs., and to maintain the same performance with the increased weight it is necessary to produce more power, which the aluminum piston makes possible.

Chevrolet Constructs New Warehouse at Des Moines

With the opening of a new warehouse of the General Motors Parts Corporation in October, Des Moines will become the distribution center for the entire state of Iowa, serving all Chevrolet, Buick, Oldsmobile and Pontiac dealers in the state, according to Thomas Brown, manager of Chevrolet's Des Moines zone.

Construction of the new warehouse, a one-story structure of brick, concrete and steel, having 30,000 square feet of floor space, is now under way and is part of GM's $58,000,000 expansion program. The new warehouse here will be in the charge of W. R. Shepherd, parts and accessories merchandising manager for the zone.

British Ford Distributors Sail for Canadian Visit

Thirty-five representatives of the British Ford Motor Company's distributors have sailed from England for Canada.

Counter Seasonal Change Noted in July Financing

A counter seasonal change was noted in the dollar volume of retail financing of passenger automobiles for July as compared with the preceding month of June, according to preliminary estimates by the Department of Commerce. July's dollar volume moved upward by about four per cent in comparison with the June volume.

The Department's preliminary estimate indicates that the July volume was approximately nine per cent above that for the corresponding month last year and exceeded every other July during the past five years. Regarding June-July changes the increase this year is the second time during the last six years that the retail financing dollar volume has been greater in July than June. The other year was in 1933 when July's volume was 6.1 per cent above June's.

American Welding Society Meeting, Chicago, Sept. 30

The American Welding Society will hold its fifteenth annual fall meeting at the Palmer House in Chicago, Sept. 30 to Oct. 4. These dates coincide with the American Metals Congress scheduled for Chicago.

The tentative program calls for technical sessions both morning and afternoon with discussions and papers covering the whole range of the welding subject.

New Half-Ton Reo With 209.5 Cu. In. Engine is Priced at $445 for Chassis

Anew ½-ton commercial car, Model 6AP, with the chassis priced $50 less than the previous ½-ton Speed Wagon, has been placed on the market by the Reo Motor Car Co. The base price of the chasis is $445; that of the complete vehicle, with panel body, $685. This model represents 40 per cent of all commercial vehicles produced by Reo.

The new Speed Wagon is powered by a six-cylinder 3 3/16 by 4⅜-in. engine of 209.5 piston displacement, which is rated at 72 b. hp. at 3200 r.p.m. A torque of 145 lb-ft. is maintained over a wide speed range. Pistons are of the T-slot, cam-ground type, made of Lo-Ex alloy.

The wheelbase is 118 in. Three rear-axle ratios are being offered, the standard ratio being 4.27 and the two optional ratios 4.55 and 4.9. A single-plate disk clutch and the Reo-built three-speed transmission with balanced tubular drive shaft are also standard. Both front and rear axles are of Reo make.

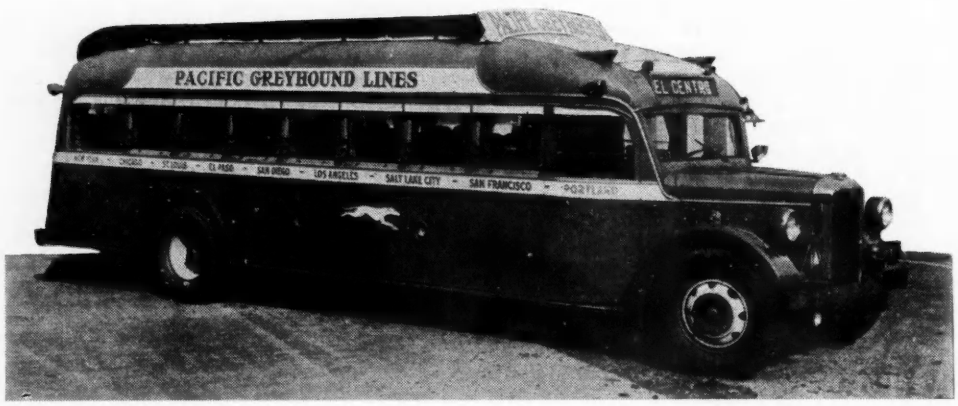
Internal hydraulic brakes are continued, with a frictional area of 170 sq. in. Drums are 11 in. in diameter and the width of the linings is 1¾ in. Steering is by a cam-and-lever mechanism. Tire equipment is 6.00 by 16, four-ply, both front and rear.

Two standard types of body are available, a panel body and a pick-up type. A suburban sedan and a station wagon can also be furnished.

The new Reo half-ton commercial panel body listing at $685. The chassis is priced at $445.

McCord Bu… Meets Tes…

by Joseph Geschelin
Detroit Technical Editor,
Automotive Industries



View of bus on which the first McCord installation was made

THREE years ago, almost to the day, inspired by the heat and humidity of the dog days of the year, we set about to speculate on the possibilities of air conditioning on bus lines. (See *Automotive Industries*, Sept. 10, 1932, pp. 324-326.)

What seemed to be a pipe dream then is a reality now. Developed by the McCord Radiator & Mfg. Co., the first experimental air-conditioning installation has given a good account of itself this summer on a Pacific Greyhound run between El Centro and Los Angeles through the torrid Imperial Valley. A second installation, embodying a number of improvements based on the Imperial Valley experience, will be made next month for an Eastern bus operator.

The automotive industry as well as the bus operators will view this development with the greatest interest, since it offers for the first time a practical means of providing bus riders with the comforts enjoyed today by the patrons of air-conditioned railroad equipment and the new motorized trains. In fact the bus operator may find some such comfort features essential if he is to retain his position in the transportation field.

We might begin by saying that the McCord air-conditioning system is what we termed "partial air-conditioning" in our previous article. Unlike other forms of transportation, the bus is subject to many restrictions, some legislative, not the least of which are size, weight and power. The first two considerations particularly, make it necessary to compromise somewhat with ideal air-conditioning requirements, since neither weight nor space will permit the use of the type of air cooling equipment now installed on railroad equipment.

Instead of sealing the passenger compartment of the bus and attempting to maintain an extreme degree of refrigeration which entails many difficulties,

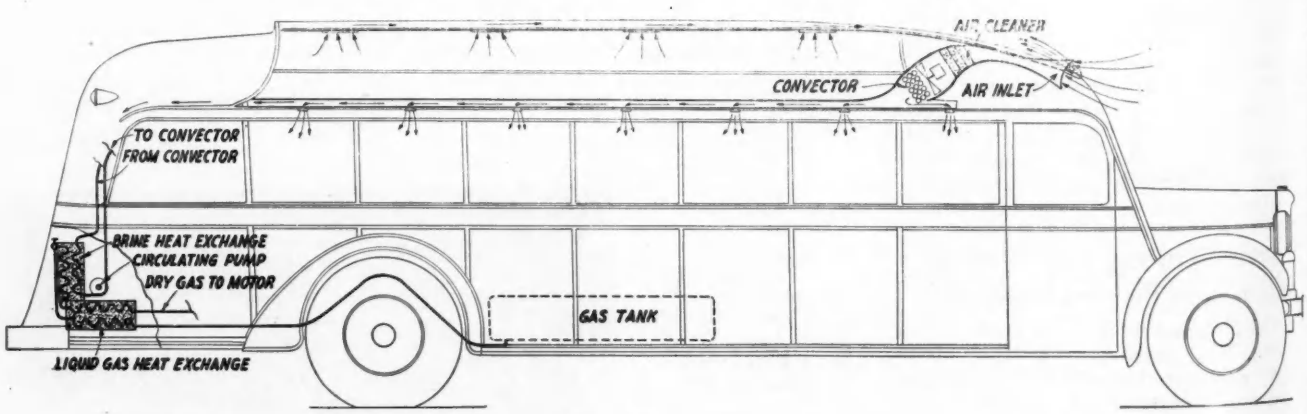


Fig. 1—Diagrammatic layout of air conditioning system on a large bus. Cooled air currents are directed at the upper part of the body of each passenger and subject to his control.

Air-Conditioning System of Service Conditions

McCord has worked out what seems to be the best practical arrangement consistent with passenger comfort. The whole scheme is based upon an adaptation of the "Petrogas" system developed by McCord for refrigerated motor trucks, in which propane is used both for refrigeration and power plant fuel.

As shown diagrammatically in Fig. 1, propane in liquid form is carried in suitably designed fuel tanks or cylinders. From these tanks, it is led under its own vapor pressure to a heat exchanger in the rear compartment, where it serves to extract heat from the circulating solution (a mixture of water and alcohol). This solution is circulated through pipes and cooling radiators by means of an electrically driven pump, operated by battery current. The motor takes 178 watts.

Air is taken from the outside through scoops over the windshield header, passing through a steel wool filter to extract dust and dirt. The air stream is then forced through the cooling radiators located at the front, above the baggage racks, by means of two special fans which take about 120 watts. The cooled stream of air is delivered into the passenger compartment from two ducts built into the floor of the baggage racks.

Fig. 2, a perspective view of the bus interior, tells the rest of the story. Each baggage rack ceiling area is provided with two rows of controllable registers so arranged that each passenger has a register directly overhead. No attempt is made to seal the bus or to refrigerate the entire interior. The whole scheme hinges on the ability to supply each individual passenger with a gentle breeze of chilled air at the rate of approximately 20 cu. ft. per min. per seat. Each individual can adjust the register so as to reduce the air flow or cut it off entirely.

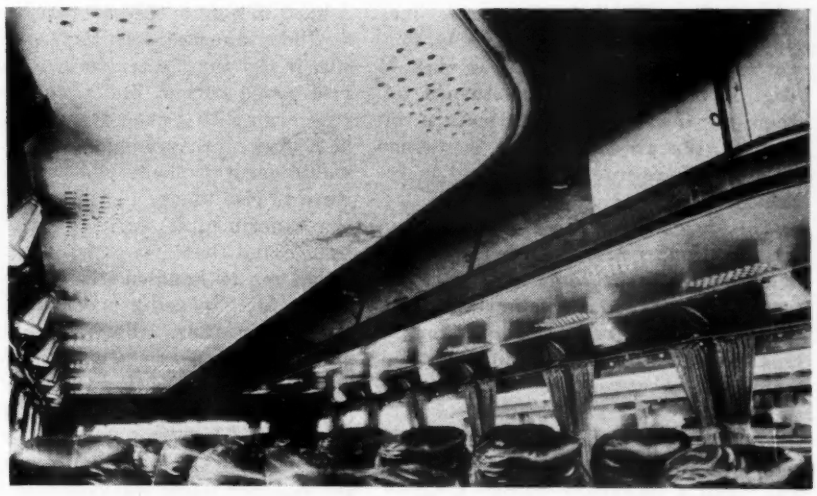
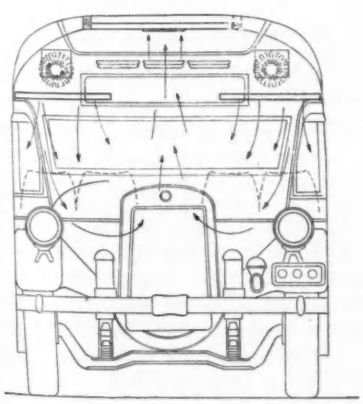


Fig. 2—Perspective view of interior of Greyhound bus showing location of air conditioning registers in the ceiling directly over each seat



Actual operation under the conditions prevailing in the Imperial Valley has proven beyond doubt that passenger comfort is reasonably well assured, and that apparently it is not necessary to cool the entire interior to attain comfort under normal conditions.

After performing its function as a refrigerant, the propane leaves the heat exchanger in a gaseous state and passes through reducing valves to special carburetors on the engine where it is consumed as fuel.

A log of temperature readings on one of the experimental runs is given below:

SCHEDULE 721, MAY 26, 1935

Temperature at 11 A. M., El Centro—87 Deg. Fahr. Outside Air and Interior Air—No Air Entering

Time	Outside Temp. Air	Temp. Incoming Air	
11.00 a. m.	87	..	
11.15 a. m.	89	82	
11.30 a. m.	90	80	
11.45 a. m.	91	80	
12.00 noon	93	82	
12.15 p. m.	93	82	
12.30 p. m.	93	83	
12.45 p. m.	94	84	
12.52 p. m.	94	87	Stop 8 min. at Oasis
1.00 p. m.	95	84	
1.30 p. m.	98	88	Stop Indio
1.45 p. m.	102	93	Leave Indio
2.00 p. m.	96	87	
2.15 p. m.	95	86	
2.30 p. m.	97	90	Stop 15 min. at Palm Springs
2.45 p. m.	93	84	
3.00 p. m.	88	76	Up Whitewater Grade
3.15 p. m.	86	76	Stop 3 min. Banning
3.30 p. m.	82	72	
3.45 p. m.	80	70	
4.00 p. m.	80	70	
4.15 p. m.	80	70	Cut off Riverside

Consider now the technical features of this system based on actual operating experience.

In the first place, when operating as a "partial air-conditioning" system it can be applied to any new bus design and to any bus now in use. In its simplest form, no effort is made to seal

the bus interior; and windows can be kept open when desired. As a matter of fact, this is a desirable condition, since the circulation of air through open windows tends to keep the atmosphere clear of smoke and odors. It is desirable, of course, to start with a well insulated bus structure, that is, to the extent that the body is shielded from the engine compartment and brake and wheel housing heat.

It is possible to so design the system as to maintain a relative temperature differential of 10 to 14 degrees between the outside atmosphere and the circulating air stream as it leaves the duct. This means that under normally comfortable outside temperatures, say 75 deg. F., the registers are turned off, then as the outside temperature increases, the air stream can be turned on and the average differential maintained.

This is consistent with the modern air-conditioning practice, for it has been demonstrated that human comfort depends not upon some constant minimum temperature, but rather upon the maintenance of a reasonable difference in temperature between the interior and the outside air. This holds true particularly in bus service where there is a flow of traffic in and out of the vehicle. Thus a passenger leaving a fairly comfortable atmosphere is not subjected to too great a change on alighting. Conversely, a passenger coming from a hot atmosphere is conscious of great comfort when the temperature drop is of the order of only seven to ten degrees, but might be actually distressed if the temperature drop were greater.

It is to be expected that a system of this type has some features unique to its operation. In the first place, the amount of refrigeration is a fairly fixed quantity, interrelated with the fuel-consuming capacity of the main power plant. For this reason, the cooling effect of the air stream produces a relative temperature differential with respect to outside conditions rather than a fixed minimum temperature.

Under unusual conditions, for example, if the outside temperature were to rise above normal limits, the temperature drop with a fixed system might not be sufficient to produce comfort. This would occur if the outside temperature were to rise to say 120 deg. F. Out of the experimental work to date it has been found that even this extreme condition can be handled with some degree of comfort by using special two-speed circulating fans. Then if unusually high temperatures are encountered, the bus operator can switch the fan to the high speed range. The effect of this would be to increase the volume of air flow and physiologically the increased air flow is found to improve human comfort.

Since the refrigerating effect depends upon fuel flow, air cooling depreciates while the engine is idling, and obviously there is little or no chilled air in circulation when the bus makes a long station stop. However, even under these conditions, some degree of comfort is maintained by running the circulating fans, thus producing the effect of a good breeze. If the stop isn't too long, the latent cooling effect in the system will be of additional help.

By the same token, when the vehicle is negotiating a long, heavy grade, excess refrigeration may be produced, but with the hold-over constituted by the alcohol-water circulating system, all or a considerable part of this excess is carried over to the next period of low fuel consumption, thus maintaining good balance of comfort conditions.

In the light of the foregoing, it seems evident that the McCord air-conditioning system provides an excellent compromise between practical rider comfort and the weighty considerations of special equipment costs, gross vehicle weight and physical size of the refrigerating unit. As a matter of fact, although this is frankly a method of "partial air-conditioning," it seems to answer practical requirements particularly well.

As mentioned earlier, a new installation embodying all the lessons learned from the Pacific Greyhound experience will be made very shortly. A study of this job should be of real value to those concerned with bus development.

New System of Electrical Units Endorsed by International Congress

UP to the present we have had two sets of electrical units, the so-called cgs units, based on the fundamental units of length, mass and time (centimeter, gram, second), and the so-called practical units, of which the volt, ohm and ampere are examples. These practical units do not form an independent system, the individual units being related to the corresponding cgs units by numerical factors, the volt being equal to 10^8 cgs units of electromotive force, the ampere equal to 10^1 cgs units of current, and the ohm equal to 10^9 cgs units of resistance.

As a result of decisions taken at the International Electrical Congress at The Hague and Brussels in June last, all of the practical units, without being in any way altered, become connected into a new coherent and absolute system based upon the proposals of Professor Giorgi, first published in 1901. The system is known as the Giorgi-MKS system. It is based on the meter, the kilogram (unit of mass), and the second. In this system the above-mentioned practical units are essential constituent elements in one-to-one relation, so that the conversion factors above-mentioned need no longer be learned and memorized by students.

The Giorgi system—

(a) is essentially composed of units already in practical use,

(b) avoids the need for the complicated dimensional formulae with fractional exponents,

(c) recognizes the need for a fourth fundamental unit, to be selected from the existing practical electrical units,

(d) leaves the cgs systems and all systems used by physicists undisturbed. All these systems may be explained simply in terms of the new system.

(e) it permits the use of either "rationalized" or "unrationalized" formulæ.

For the present, the IEC has avoided a decision on the question of "rationalization," thus leaving each author free to use the formulæ which he prefers.

In addition to the above-mentioned decision on the adoption of the Giorgi system, three derived units were pointed out by way of example. These were—

(a) the unit of electric gradient, the volt per metre,

(b) the unit of magnetic flux density, the weber per square metre,

(c) the unit of volume energy, the joule per cubic metre.

The IEC meeting decided to endorse the IEC Oslo convention of 1930 that the permeability of vacuum μ_0 be retained in magnetic formulae as a physical quantity and not as a mere numeric. This is a fundamental part of the Giorgi System.

It was decided by the IEC that the system be known as the "Giorgi System."

Industry's Role in Social Security Scheme Revealed by Analysis of Act

by Don Blanchard
Editor of Automotive Industries

ATTACKING the problem of economic security on a broad front, the colossal social security measure enacted last week affects business directly through its compulsory old age pension and unemployment insurance provisions. Funds for the payment of benefits under these provisions will be raised by payroll and pay envelope taxes beginning with one per cent in 1936 and reaching a maximum of 9 per cent in 1949. These taxes will total in excess of a half a billion dollars in 1936 and will soar to nearly three billion dollars in 1949, it is estimated. Moreover, the pension reserve ultimately, it is expected, will amount to 50 billion dollars, while the unemployment reserve will probably peak at $2,500,000. Since these funds are all to be invested in Federal obligations, unless the public debt expands mightily in the meantime, all U. S. bonds will be in the security fund and then some, with all the problems such a situation implies.

The unemployment insurance provisions apply to all employers of eight or more persons, while the old age sections apply to all employers, except that in both cases farm laborers, domestic help, seamen, Government employees, and employees of charitable, religious, scientific, literary or educational institutions, are exempted. Unemployment insurance does not apply to family members.

The following questions and answers attempt to sketch in a general way what the new law provides with respect to compulsory old age pensions and unemployment reserves:

Compulsory Old Age Pensions

Where does the pension money come from?

It is paid out of the Old Age Reserve Account which the Act creates in the Treasury Department.

How does money get into this Account?

Beginning with the fiscal year ending June 30, 1937, the Act authorizes the appropriation into the account of sufficient money to meet the payments required, the amount to be determined actuarially by the Secretary of the Treasury. Surplus funds in the Account are to be invested only in obligations of the United States. They must be acquired on a basis that will yield not less than 3 per cent. In addition, the Treasury is authorized to issue special obligations to the Fund at 3 per cent. The Act does not state what the Treasury is to do with the money received from the sale of these special obligations to the Reserve Account.

What money is appropriated?

The Act does not earmark any particular Federal revenue, but it is intended that all, or a large proportion of the total, will be provided by income taxes on employees and excise taxes on employers which the Act levies.

When do these taxes begin?

They apply beginning with the calendar year 1937.

To what do these taxes apply?

They apply to all remuneration for employment including the cash value of all remuneration paid in any medium other than cash, except that they do not apply to remuneration in excess of $3,000 paid to an individual under 65 in a calendar year.

What are the tax rates?

The tax rates are shown in the following table:

Calendar Years	Employee's Income Tax*	Employer's Payroll Tax*	Total Tax
1937, 1938, 1939	1	1	2
1940, 1941, 1942	1½	1½	3
1943, 1944, 1945	2	2	4
1946, 1947, 1948	2½	2½	5
Thereafter ...	3	3	6

* Percentages apply to remuneration as defined in answer to previous question.

How are these taxes paid?

The employer pays them, deducting the employee income tax from the pay envelope.

May these taxes be deducted on income tax return?

The employer may deduct the excise tax on his return, but the employee may not deduct the tax on his pay envelope.

Who are eligible for pensions?

Qualified individuals. They must be at least 65 and, after Dec. 31, 1936, and before reaching 65, they must have earned not less than $2,000 and been employed for some five days, each day being in a different calendar year. This means that no pensions will be paid under this Title until 1942 and no one reaching his sixtieth birthday by Dec. 31, 1936, can qualify.

Who determines eligibility?

The Social Security Board created by the Act. This Board will have three members appointed by the President with the approval of the Senate.

How is the amount of the pension determined?

If total wages after Dec. 31, 1936, and before reaching the age of 65 were not more than $3,000, the monthly pension is ½ per cent of such total wages.

If total wages were from $3,000 to $45,000, an additional 1/12 per cent is paid—a total of 7/12 per cent.

If total wages were more than $45,000, there is a further addition of 1/24 per cent, making the total 15/24 per cent.

However, the maximum pension in no case will exceed $85 monthly.

If a qualified person continues to work after 65 does he get his pension?

The Act says that for each calendar month in which such person has regular employment, he loses one month's pension.

What happens if an individual dies before 65.

His estate receives a payment amounting to 3½ per cent of total wages paid to him after Dec. 31, 1936.

What happens if a pensioned individual dies before total payments amount to 3½ per cent of total wages?

The balance is paid to his estate.

Do unqualified persons benefit under any conditions?

Yes. They receive a lump sum payment of 3½ per cent of total wages paid to them after Dec. 31, 1936, and before they reached 65.

How are pension payments to be paid?

The Secretary of the Treasury will make them on the basis of lists certified by the Social Security Board.

Unemployment Insurance

While the compulsory old age pension provisions just outlined set up a system of insurance that is entirely under Federal control, the unemployment reserve provisions of the Act are designed to induce, or coerce, the states to enact their own unemployment reserve laws subject to certain minimum standards required by the Federal Act. Since the payroll tax, which is intended to finance the unemployment benefits, applies whether the states enact laws or not, it is expected the states legislatures will act promptly. Thus it is hoped to attain a uniformity of cost under laws designed to meet the needs of the individual states.

Another feature of the unemployment insurance provisions of the Act is that Federal liability is limited by the amount of taxes collected, while under the old age pension provisions, there is no limit on the extent of the Government's liability.

What employers are subject to the tax for unemployment insurance?

All employers of eight or more persons with the exceptions noted earlier. The term "employer" includes those who employ eight or more persons during some parts of some twenty days, each day being in a different calendar week during the year.

Who pays the tax?

The employer. No deduction may be made from the pay envelope to cover all or part of the tax.

When does the tax start?

With the calendar year of 1936.

How much does the tax amount to?

One per cent of total payrolls in the calendar year 1936, 2 per cent in 1937 and 3 per cent thereafter.

Must this tax be paid if state law requires contribution to a state fund?

Employers may credit against the Federal tax all payments made to a state fund (or funds) up to 90 per cent of the amount of the tax, provided that the state unemployment insurance law has been approved by the Social Security Board. In other words, only the difference between what the employer pays into a state fund and the Federal tax, is paid into the Federal government, except that 10 per cent of the tax must be paid to the Federal government in any case and except as follows:

If because of a record for employment regularity, a state law permits an employer to contribute less than the maximum, the difference between what he actually pays and (a) the maximum rate applicable under the law or (b) 2.7 per cent of wages paid in the year, whichever is lesser, may be credited against the Federal tax. This additional credit is allowed, however, only when the Social Security Board finds that the lower rates is based on not less than three years' experience and that in the case of guaranteed employment, the employer has fulfilled his guarantee in the previous year and that such guaranteed employment amounts to not less than 7½ per cent of total wages. In addition compensation must have been payable during the preceding year and the employer's reserve account must be at least five times the largest amount of compensation paid during the three preceding years and not less than 7½ per cent of total annual wages. Guaranteed employment as used above means a minimum of 40 weeks of 30 hr.

The purpose of the additional credits sketched above obviously is to take care of state laws which permit carrying contributions of individual employers, or groups, in separate accounts, and which grant employers with good records, reductions from the contribution rates required of employers with poorer records.

What use does the Federal treasury make of the money it receives from taxes in excess of the credits outlined in the preceding answer?

Apparently the money goes into the general fund. However, the Act also appropriates money for grants to states for unemployment compensation administration. The Act appropriates $4,000,000 for the fiscal year ending June 30, and $49,000,000 for each fiscal year thereafter. This money is distributed to the states with approved laws in proportions determined by the Social Security Board on the basis of population, number of persons covered, administrative costs and other relevant matters.

What standards must state laws meet to secure the approval of the Social Security Board, without which contributions to state funds cannot be credited against the federal tax or any grant be made from the appropriation for administration?

The state law must provide that:

All compensation must be paid through public employment offices or through other agencies approved by the Board.

No compensation shall be paid until two years after employers start contributions.

All contributions must be paid over to the federal treasury.

Compensation must not be denied because an unemployed person refuses work as a strikebreaker, because the job offered is below prevailing standards in wages, hours, etc., or which requires him to join a company union or not to join a "bona fide" labor organization.

Administration must reasonably assure full payment of compensation when due. Other than this, the Act does not specify anything in regard to waiting periods, amounts of benefits and duration thereof, etc. However, in the case of an approved state law, no benefits may be paid until two years after contributions start, which means that benefit payments can't start in any state before 1938, except Wisconsin.

Those refused compensation must be able to get a hearing before an impartial tribunal.

All money requisitioned from the federal government must be used for compensation.

Reports required by the Board must be made.

How does the federal treasury handle contributions which are transferred to it by the states?

These funds are put in an Unemployment Trust Fund created by the Act. Money not required to meet current withdrawals is to be invested in U. S. obligations. Special obligations may also be issued to bear an interest rate equivalent to the average rate on other U. S. obligations then outstanding. The Treasury is authorized to keep separate records for each state of the amounts to their credit. The states may requisition such funds to pay unemployment compensation but only up to the amount to their credit.

New Home for London Show

A plan is under consideration in London by which the British metropolis is to be provided with a large modern exhibition building and which would house the annual London automobile show in addition to other industrial exhibitions. The automobile shows in London for a great many years past have been held in the Olympia hall, but this building leaves very much to be desired, because it has no modern ventilation system and the parking facilities in the neighborhood are very inadequate. The automobile shows will continue to be held at Olympia for another two years at least, because the Society of Motor Manufacturers and Traders, who conduct the show, have a lease on the building for this year and next. Thereafter the new proposed building, to be erected on the grounds of the old Earl's Court Exhibition, would receive consideration.

Diesel Engines for Airplanes Built by Soviets

An experimental high-powered Diesel engine for airplanes was recently completed at the Central Institute for Aircraft Engine Design in Moscow. Tests made on the engine are said to have given good results, the fuel consumption ranging between 0.35 and 0.37 lb. per hp.-hr., as compared with 0.55 lb. for gasoline engines. Another engine of similar design is being built by the Kharkov Diesel Research Institute.

JUST AMONG OURSELVES

NRA—A Sales Promotion Dept.?

NRA'S most important task in the coming months apparently is to function as a sales promotion department for the President's campaign for new legislation regulating hours, wages and trade practices. Of course, it was announced earlier that the Recovery organization would concern itself largely with fact-finding, but the suspicion that what it was expected to produce was not primarily facts but sales arguments, has been strengthened by recent NRA statistics, released by the President, summarizing reported violations of code standards during July.

The report lists 9049 violations. NRA doubtless could have produced a more impressive total, if it had wanted to do so, while the codes were still in effect. Curiously enough, included in this total are 43 instances of price-cutting in the auto repair and service trade—presumably the motor vehicle maintenance trade. The code for this trade had price-control provisions but they were stayed in the President's order approving the code, and so far as we know never did become effective. Nevertheless the NRA includes in its report 43 instances of violation of price standards that never existed.

In the motor vehicle retailing trade, the report shows 154 instances of price-cutting. During the last six months prior to the Supreme Court decision almost any local code commissioner could have provided that many instances of chiseling. But it didn't fit into the Administration's political strategy to look for violations at that time.

We hope we are wrong in this estimate of NRA's present activities and that studies now being conducted by it *are* intended to develop not only facts but a perspective of value to the public and affected industries, and are not designed to justify the course pursued under the codes. But with the President on record favoring legislation providing for federal control of hours, wages and trade practices, it is difficult to see how NRA has much choice but to develop a story which will support the position the Administration already has taken and justify its policies in the past.

* * *

Octaneous and Smooth Fuels

Two more suggestions have come in for a word to describe the anti-knock quality of fuel.

C. G. A. Schmidt, equipment engineer in the Pennsylvania Department of Highways, proposes "Octaneous," suggesting that in comparisons it could be said that "one fuel is more octaneous than another, etc."

From Los Angeles, C. F. Lienesch, technical representative of the Union Oil Co. of California, writes that "A good anti knock fuel might be expressed as a 'smooth' gasoline, which would imply that low octane gasoline was 'rough'." This would provide a simple means for expressing qualitative comparisons, which is what we had in mind, while for quantitative purposes, Mr. Lienesch points out, octane numbers could be used as at present.

Has any one else any ideas on the subject?

* * *

Used Car Price Control Again

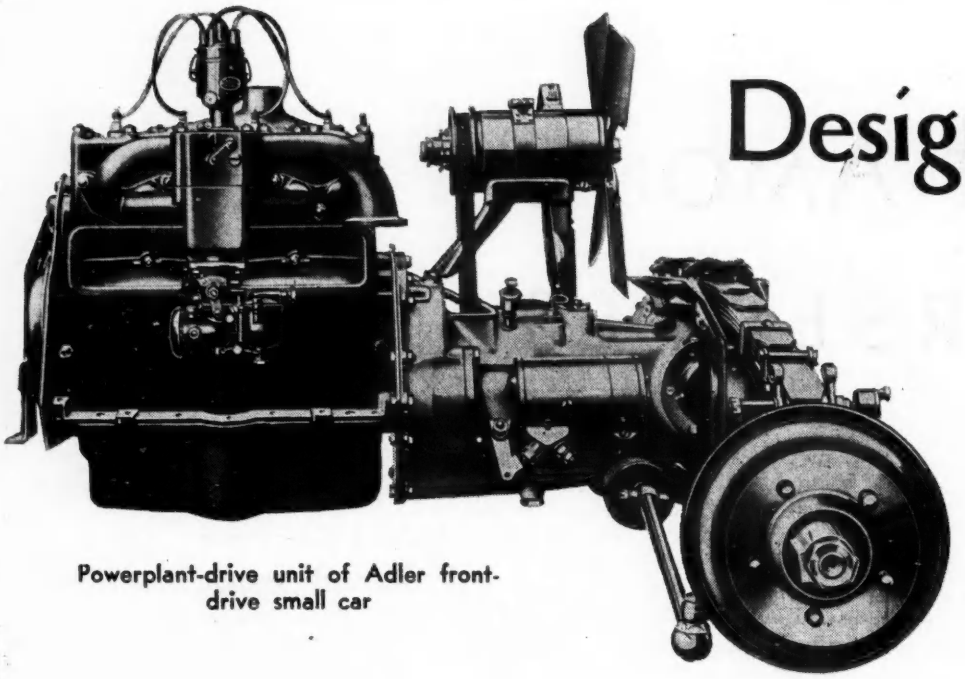
LAST week representatives of the NADA held a preliminary meeting with the Federal Trade Commission with the objective of getting that agency's approval of a voluntary agreement perpetuating the code principles of new car price maintenance and used car allowance control.

Whether the FTC will grant what the NADA wants remains to be seen but our guess is that it won't. The Commission has not generally looked with favor on resale price maintenance and, unless that is obtained, used car allowance control is worthless. In addition, the Commission can't forget what the Supreme Court said was not interstate commerce in the Schechter case.

Moreover Washington has indicated that in voluntary agreements trade practices will be divided into two categories—those which are now recognized in law as unfair, and those which industry or trade holds to be destructive but which have not been defined as such legally. As we see it, the code marketing rules, if approved, would fall in the latter classification which the government has said it will not undertake to enforce.

However, even if the Commission approved the marketing rules and undertook their enforcement, there remain grave doubts as to their enforceability—at least so long as the underlying causes which practically compel dealers to over-allow continue.

—D. B.



Powerplant-drive unit of Adler front-drive small car

Design Trends

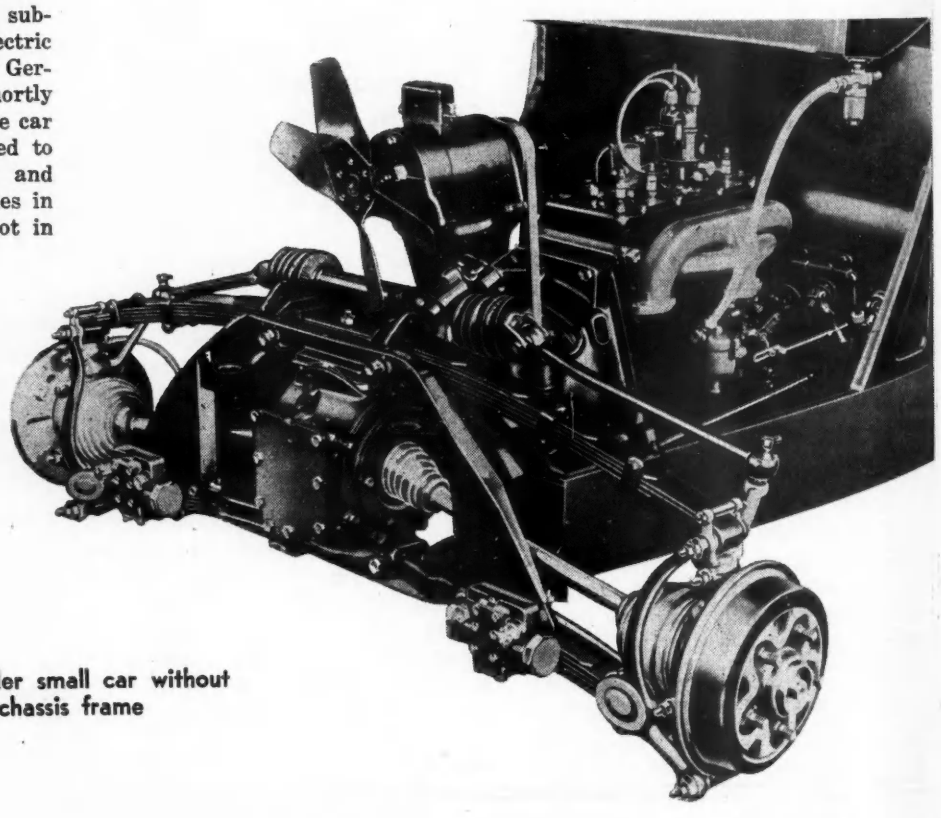
Part II

Part I appeared in the issue of August 24, 1935. Part III will be printed in an early issue

IN recent years considerable interest has been shown in front drives in Germany and, as already pointed out, nearly 20 per cent of last year's production in that country was of cars having this feature. Most of these front-driven cars, however, are small cars of low price. Those in current production include the Adler, Audi, D.K.W. and Stoewer—all products of long-established manufacturers. In addition, a front-drive car was developed by the National Automobile Company, a subsidiary of the German General Electric Co., also one of the pioneers in the German automobile industry, but shortly after this N.A.G.-Voran front-drive car was launched the company decided to abandon the passenger-car field and confine itself to commercial vehicles in the future. Hence this car is not in production at present. However, it is the writer's understanding that the company hopes to dispose of the rights to this car and it may be that, with automobile markets reviving the world over, the model may still become a factor on the market.

Out of five different models produced by the German Adler firm, three have front drive. All three have four-cylinder engines with from 60 to 116 cu. in. displacement, and the arrangement of the powerplants is conventional, the engine being mounted with the flywheel end forward and combined with the transmission and final drive gear into a single unit. Although the wheelbase of one of the models is 114 in., which is quite long for a car of only 100 cu. in. piston displacement, and though the powerplant evidently is built as compactly as possible, the body room is rather scanty, as indicated by the fact that the front edge of the driver's seat is only about 18½ in. back of the cylinder block.

To increase the weight on the front

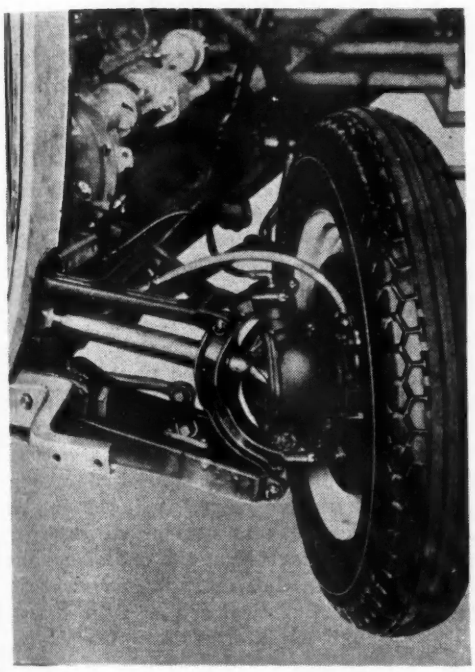


Front-end of Adler small car without separate chassis frame

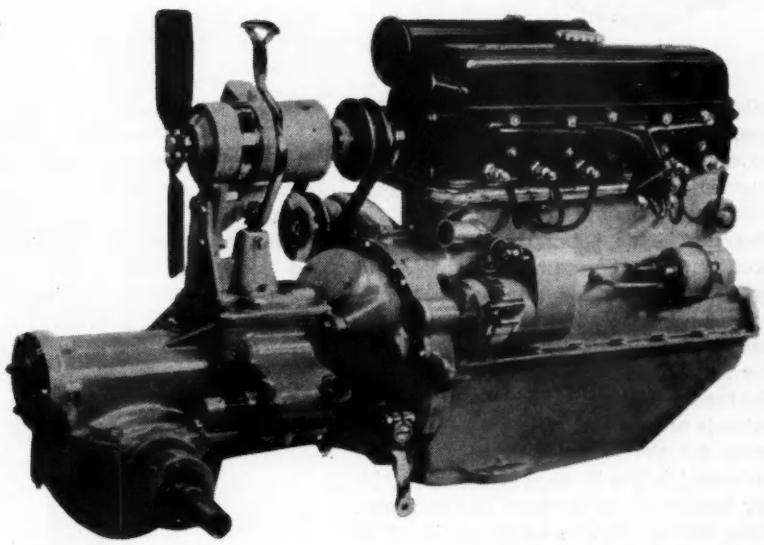
Stimulate Interest in Powerplant-Drive Units

by P. M. Heldt

Engineering Editor, Automotive Industries



Front independent suspension and front drive of Audi six-cylinder car

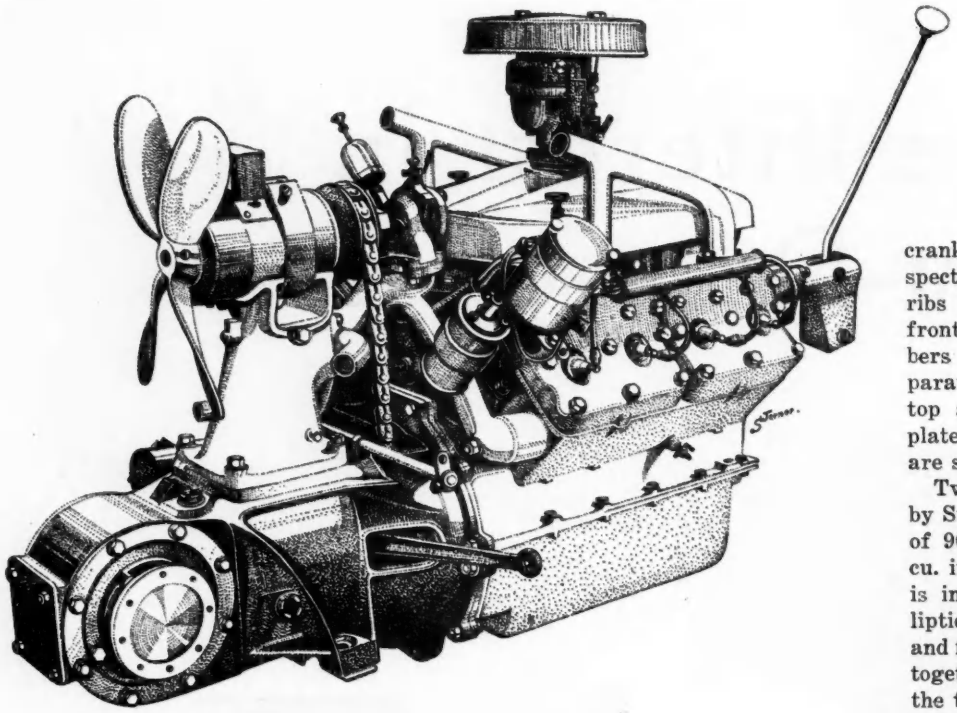


Powerplant of Audi front-drive car with worm drive

wheels, the generator (combined with radiator fan) is placed over the transmission and the fuel tank is supported on the front of the cowl high up under the hood, so that gravity fuel feed can be used. This car has independent suspension at the front on superposed semi-elliptic transverse springs, while the rear suspension, which is also of the individual type, is rather original. The rear wheel spindles are carried at the ends of crank arms. The cranks have their bearings on the frame. Quarter-elliptic springs are secured with their butt ends to the crank arms (of box section pressed steel), and extend forward therefrom, their small ends bearing against wear plates secured to the side rails. Last year a somewhat different rear suspension was employed on these cars. The rear wheels then also were mounted on crank arms, but these crank arms extended forward from their support on the chassis, and the elastic member consisted of a heavy-walled rubber bushing vulcanized to both the crankshaft and the frame tube through which it extended.

This Adler "Trump" car is notable as having been one of the first of the type without separate chassis frame, for which construction the foreign affiliates of the Budd Manufacturing Co. have been largely responsible. The body of the Adler "Trump" is being manufactured by the Ambi-Budd Company of Berlin. It will be seen from the photograph of the front end of the chassis that the body sills are extended forward and have a trussed pressed-steel structure bolted to them at the forward end, which spans the housing of the final drive gear and has the semi-elliptic cross springs secured to it at top and bottom. At the rear the powerplant is supported from the cowl at a single point, while at the front it is supported on the cross-member at two closely-spaced points, all supports being on rubber. The hydraulic shock absorbers are mounted on the forward side of the front cross-member.

The Audi front-drive car has a six-cylinder engine of 120 cu. in. displacement and the arrangement of the powerplant is the usual one for front-drive cars, engine, transmission and final-drive housing being combined in a unit. The principal difference between this and most of the other German front-drive cars is that a worm final drive is used and, as the worm is above the worm wheel, the powerplant is some-



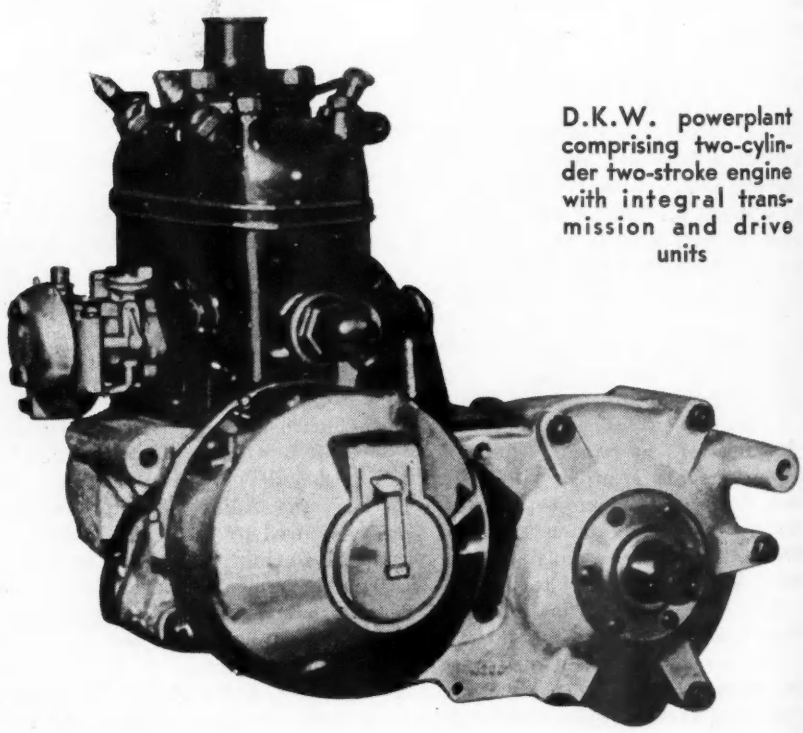
Stoewer powerplant-drive unit with eight-cylinder V engine

what higher than usual. In this case, too, the generator is mounted on the cover of the transmission housing and carries the radiator fan on its shaft. Front suspension is independent, the steering heads being connected to the front end of the frame by a wishbone-type of link on top and by the cross-spring at the bottom. The steering head naturally is of a shape suitable for front drive, having a large hole at the center through which the driveshaft extends and providing room between its arms for the spherical housing of the universal joints through which the driving torque is transmitted to the wheel. This model, first brought out in 1933, was continued practically unchanged the following year.

A number of front-drive cars are being built by the D. K. W. Works in Zschopau, Saxony, the firm that bought the assets of the defunct Rickenbacker Motor Company some seven, eight years ago. The smallest of these is equipped with a two-cylinder, vertical, two-stroke engine set with its crankshaft across the frame at the forward end. The transmission is in front of the engine and parallel with it. I have never seen any detailed description of the transmission, but it would seem from the photograph of the powerplant reproduced herewith that it is coaxial with the differential and therefore handles the driving axle torque. Two engines are being offered with this model, of 36 and 42 cu. in. respectively.

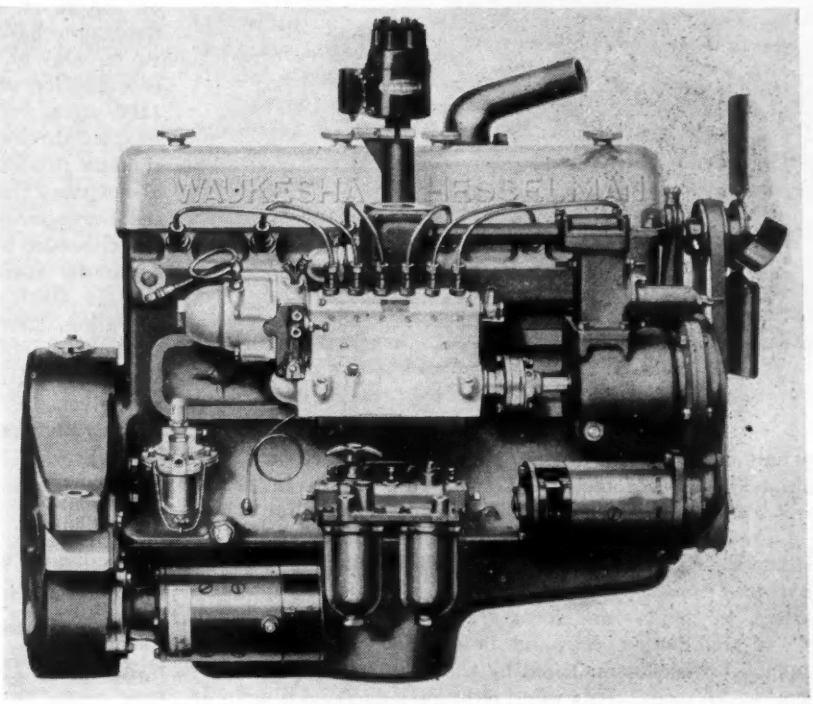
The independent front suspension is by transverse half-elliptic springs, one above the other. A combined generator and starter is built integral with the engine, the armature serving as the engine flywheel. The entire powerplant, including the generator and the relatively large storage battery, is located close behind the front transverse springs, hence the proportion of gross weight on the front wheels must be relatively large. This car has an unusual frame composed of two longitudinal channels with the open side outward and spaced only about 8 in. apart. The powerplant is supported on these frame rails by steel links bolted against the engine crankcase and the transmission case respectively, by studs extending through ribs formed on the housings. At the front and rear the longitudinal members are connected by plates of comparatively heavy gage, riveted to their top and bottom flanges, and to these plates the transverse suspension springs are secured by clips.

Two front-drive models are produced by Stoewer in Germany, a four-cylinder of 90, and an eight-cylinder V of 132 cu. in. displacement. Front suspension is independent, by transverse semi-elliptic springs. Engine, transmission and final drive housing are flange-bolted together. Supporting arms are cast on the transmission housing and rest on a frame cross-member. At the rear there is a trunnion support which is much higher up than the front supports. The shift lever is mounted on this trunnion, and the transmission control bar passes through the trunnion and through the V of the engine into a sort of pedestal on top of the transmission which supports the generator. This car also has independent rear suspension. Each rear wheel is carried at the end of one arm of a bellcrank extending horizontally, while the vertical arm of the bellcrank, through the intermediary of a pull rod, compresses a coiled spring.



D.K.W. powerplant comprising two-cylinder two-stroke engine with integral transmission and drive units

Waukesha Offers Hesselman Engine for Truck Service



Marathon Hesselman engine, pump side

UP to the present the Waukesha Motor Company has built Hesselman engines only for industrial purposes, and particularly for application to tractors, air compressors, excavators and generators. Convinced that there is a field for this engine also in the automotive field, the company has developed a Hesselman equivalent of its Marathon Six gasoline engine, to be known as the Marathon Hesselman Six, which is practically interchangeable with the gasoline engine in respect to space occupied, mounting dimensions, and output.

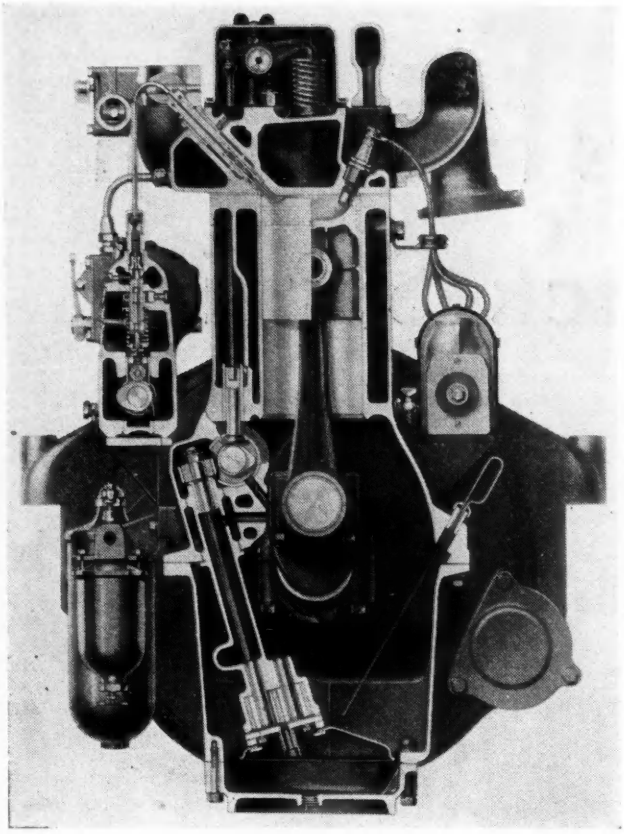
The Hesselman engine, it may be recalled, is a moderate-compression heavy-oil engine which employs fuel injection during the compression stroke and ignition by electric spark. The weight is only from 30 to 50 lb. greater than that of the equivalent gasoline engine. This difference being due to the injection apparatus.

Starting of these engines can be effected by means of a hand crank, with no more difficulty than in the case of a gasoline engine of equal displacement. A conventional dash primer is used, which sprays a small charge of gasoline into the intake manifold. The charge of air and gasoline vapor drawn into the cylinder while cranking is fired by the spark plug, and normal operation on fuel oil begins after a few cycles. It is claimed that these engines require no more priming than gasoline engines under similar conditions.

No carburetor is used with this engine, but fuel oil is injected into the cylinders by the same type of injection pump as used with Diesel engines, toward the end of the compression stroke. The form of the inlet passage and combustion chamber promotes turbulence of the incoming air, which is maintained throughout the compression stroke, with the result that the finely atomized fuel from the injection nozzle is distributed throughout the air charge and carried past the spark plug, which ignites it.

A built-in governor is connected to a butterfly throttle valve in the air inlet, which is also under the control of a foot or hand accelerator. The amount of fuel injected is proportioned in accordance with the amount of air drawn in, by a vacuum-controlled piston connected to the quantity-control rod of the fuel injection pump. When the throttle is closed and a high vacuum created, the piston moves to reduce the amount of fuel injected, and vice versa.

The general design of the engine is in line with established Waukesha prac-



Sectional view of Marathon Hesselman engine

tice. Cylinders and top half of crankcase are cast in a single block of special cylinder iron, bored and honed to close limits. Water jackets extend to the bottom of the cylinders. Cylinder heads are also in a single casting which is held to the block by heat-treated studs. Pistons are of aluminum alloy, with solid skirt and with dished crown so the entire compression space is formed between the cylinder head and the piston crown. Piston pins are of the floating type. Connecting rods are rifle-drilled for pressure lubrication of piston pins and have the bearing metal cast directly into the big ends.

The crankshaft is supported in seven main bearings. These are of the steel-back, babbitt-lined, precision type. All valves are in the cylinder head, the intakes being of chrome-nickel and the exhaust valves of chromium-silicon steel. Valves are actuated through the intermediary of tubular pushrods which are case hardened and ground. Timing gears are of mild steel and cast iron respectively and are cut with helical teeth. They have flood lubrication.

The fuel system comprises a positively-driven diaphragm-type feed pump which delivers fuel from the storage tank to the injection pump. The latter is a six-plunger solid-injection pump which delivers to the Hesselman type open spray nozzles through drawn-steel high-pressure lines. The injection pump and nozzles are protected by twin fuel filters in series. The first is an edge-type filter which may be cleaned in operation, while the second has a cloth filtering element backed up by a metal screen. Gasoline for starting is carried in a small tank and is injected into the intake manifold by the primer.

Ignition is by magneto and plugs. It will be seen from the cross section of the engine reproduced herewith that the spark plugs and the injection nozzles are secured in the cylinder head. An oil-type air cleaner for the inlet manifold is standard equipment.

Lubrication is by pressure to all bearings, from a gear-type oil pump carried in the sump and supported from the upper half of the crankcase, through oil-distributing leads drilled in the walls of the crankcase. The pressure system delivers oil to, and takes care of the lubrication of the main, camshaft, connecting-rod and piston pin bearings, as well as of the rocker-arm, oil-pump, and water-pump drive shaft bearings and the idler gear stud and gears. Oil mist lubricates the cylinder bore and the governor.

Curves of performance characteristics of the engine, corrected to standard atmosphere, show a maximum torque of 185 lb.-ft. at about 1200 r.p.m., a maximum horse power of 75 at 2600 r.p.m. and a minimum full-load fuel consumption of 0.52 lb. per hp.-hr. at 1400 r.p.m. The fuel consumption is less at three-quarter load. For continuous full-load service a load factor of not more than 80 per cent (based on the horse-power curve referred to) is recommended by the manufacturer. The maximum speed for continuous operation is 2000 r.p.m., for intermittent operation, 2500 r.p.m.

The principal dimensions of the Waukesha-Hesselman Marathon Six are given in the table herewith (in which all linear dimensions are in inches):

Bore and stroke	3¾ x 4¼
Displacement, cu. in.	282
Valve diameter, intake	1⅝
Valve diameter, exhaust	1¼
Connecting rod bearing, diameter x length	2 x 1½
Front main bearing, diameter x length	2⅝ x 1¼
Center main bearing, diameter x length	2⅝ x 2
Intermediate main bearings (4), diameter x length	2⅝ x 1¼
Rear main bearing, diameter x length	2⅝ x 2
Piston pin, floating, diameter x length	1 x 2⅞
Connecting rod length	8
Number piston rings	4
Timing gears, face	1
Exhaust flange	2¼
Fan diameter (extra equipment)	18
Approximate weight, lb.	750

Pioneer French Car Maker Reorganized

ONE of the older concerns in the French automobile industry has been reorganized as the G. Irat-Godefroy, Levesque Company, and has brought out a 5-hp. light car for which a gasoline mileage of 39 to the U. S. gallon and a maximum speed of close to 70 m.p.h. are claimed. With gasoline retailing in Paris at 51 cents per gallon, the low fuel consumption is, of course, an important feature. The car is equipped with a stock Ruby engine of 58 cu. in. displacement developing 24 hp. at the brake, and it has a three-speed transmission and front-wheel drive. It is a two-passenger open car of very low build, upholstered in leather. A 12-volt electrical system is regular equipment, a spare wheel is carried under the rear deck, and the equipment is said to be sufficiently comprehensive so that the purchaser does not have to buy any additional items before he can run the car. A lot of 300 has been placed in production and is expected to come through the works by the end of June.

Welding at the Ford Plant

IN the V-8 Tudor sedan there are no less than 3415 welds, including 3154 spot welds, 217 electric arc or gas welds, and 44 butt welds.

Equipment at the Rouge plant of the Ford Motor Company includes more than 600 welding machines and more than 1000 welding torches. Most of the machines are automatic, being controlled by synchronous tube timers which look like radio sets.

One of the latest welding operations is that by which the outer panel of the door is welded to the door frame by 32 spot welds. These spot welds are made eight at a time. One of the most interesting welding operations in the Pressed-Steel Building is on the fuel tank of the car. The tanks are made in halves which are placed in position facing each other and are then welded together. Each tank-welding machine is now being equipped with a travelling carrier referred to as an "iron man," which moves the tank around on the welding machine. It operates on a low, flat-topped metal table and is moved by gears and chains, the 102 in. of seam being welded in 90 seconds. There are 11 welded spots to the inch, and the tanks are tested for water tightness in a nearby tank.

The front end of the body is entirely fabricated by welding, the ventilator, pillars and lower panels being assembled to the windshield, upper header section and cowl section by spot and arc welding. The three sections of the door frame are flash-welded together by four machines, each with a capacity of 300 per hour. There are some fifty welding operations on each door, and even the lock is welded in place.

Rear panel and quarter panels are welded together in a "balloon" flash-welding machine of which four are in regular use. These machines were designed and built in the Ford plant. A length of 72 in. is welded in 7 seconds.

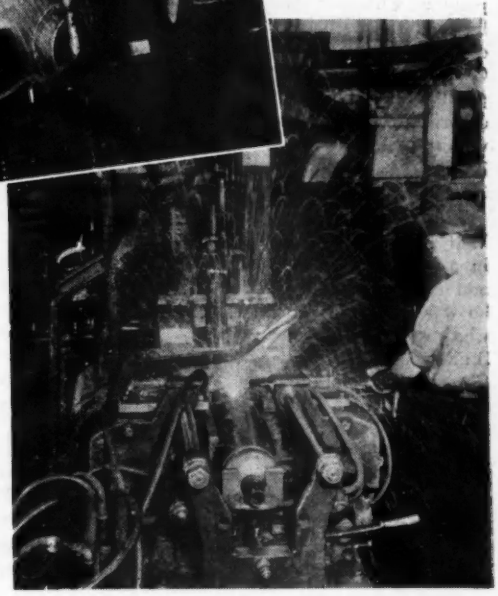
Rear radius rod brackets are welded to the rear-axle housing in double-headed, fully automatic arc-welding machines, welding at the rate of 55 in. per minute. Time, pressure, power, quantity of wire, melting rate and other factors are controlled automatically.

Rear radius rods, which were formerly formed tubes, are now welded up. This ran up the cost, but the problem was solved in cooperation with manufacturers of welding equipment and supplies. Propeller shafts are now made of tubes which are arc-welded to the driving ends. This operation is entirely automatic.

In the steel mill at the Rouge plant

The top view shows automatic welding of the door frame into one solid unit, eliminating possibility of squeaks in use

A flash welding operation on the muffler is illustrated in the lower right view. The intake pipe is being welded to the muffler by the butt process

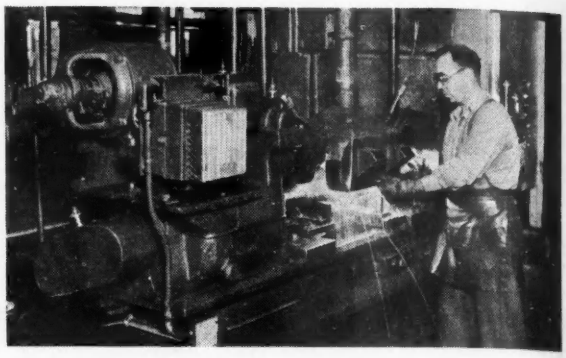


At the left is shown the tank welding machine and the Iron Man carrier. The Iron Man carries the tank while it is being welded on a course shown by the oil marks on the table

a considerable saving is effected by spot-welding pieces of strip steel together so they can be wound on spools, replacing the large, expensive stitching machines formerly used for the purpose, and saving considerable material, as with spot welding the overlap is only half an inch, while with stitching it amounts to 2 or 3 ft.

One of the most important reasons for the extension of welding operations is that it permits greater strength with less weight. Less weight means less material, hence lower cost, and the automatic operation of the welders also reduces the labor cost.

Oxy-acetylene welding is extensively used in the Rouge plant, but mostly on repair work. The blow torch is used mainly for cutting out disks from plates up to 10 in. thick and from forgings sometimes as thick as 2 ft. In production this form of welding is used chiefly for "tacking" operations on the body.



Arc-welding the truck rear axle housing. Welding the wheel flange to seamless tube is done automatically, welding on both sides.

Death Ends Willys' Colorful Career

(*Continued from page* 251)

operations of the concern, had to be enlarged at frequent intervals. In 1914 a production of 48,000 cars was reached. In 1912 Willys acquired the business of the Gramm Motor Truck Company of Lima, Ohio, one of the largest producers of trucks at the time. Two years later he obtained a license under the Knight sleeve-valve engine patents and began to produce Willys-Knight cars. During the war the various plants controlled by Willys produced trucks and munitions for the Government. Willys was appointed chairman of the War Camp Community Recreation Fund, which set itself the task of raising and distributing $4,000,000 to provide soldiers with the means for healthful recreation.

During the war and the boom period following its conclusion, Willys greatly expanded the field of his activities. He secured control of the Fisk Rubber Company of Chicopee Falls, Mass., whose tires he used to equip his cars. He also gained control of the Curtiss Aeroplane & Motor Corporation, which had built an enormous plant at Buffalo to produce training and other planes for the Government. He also was in control of the Moline Plow Company, Moline, Ill., which turned out a two-wheeled farm tractor in large numbers.

After the war, Mr. Willys organized the Willys Corporation, to manufacture a car in a higher price class than the Overlands and the Willys-Knights. In this enterprise he was associated with a group of engineers who previously had been connected with the Studebaker Corporation and with Walter P. Chrysler. A large plant was erected at Elizabeth, N. J., for the manufacture of a six-cylinder car, but just about the time production was to begin, during the depression of 1920, the corporation was placed in receivership, with debts exceeding ten million dollars. The plant was sold at auction and was later used by Durant for the manufacture of his Star car.

Failure of the Willys Corporation came near costing Mr. Willys his control of the Willys Overland Company. This was due to the fact that the Willys Corporation held a large block (about one-third of the total) of Willys Overland common shares, and the court which had ordered the receivership was petitioned to order the sale of this stock, so that claims of creditors and preferred stockholders of the Willys Corporation might be satisfied. Sale of this stock to unfriendly interests would have meant loss of control by Willys. In the emergency a group of Toledo capitalists got together, under the leadership of Thomas H. Tracey, and raised a fund of about three million dollars to guarantee satisfaction of the claims of creditors and preferred stockholders, thereby preventing the sale of the Overland stock.

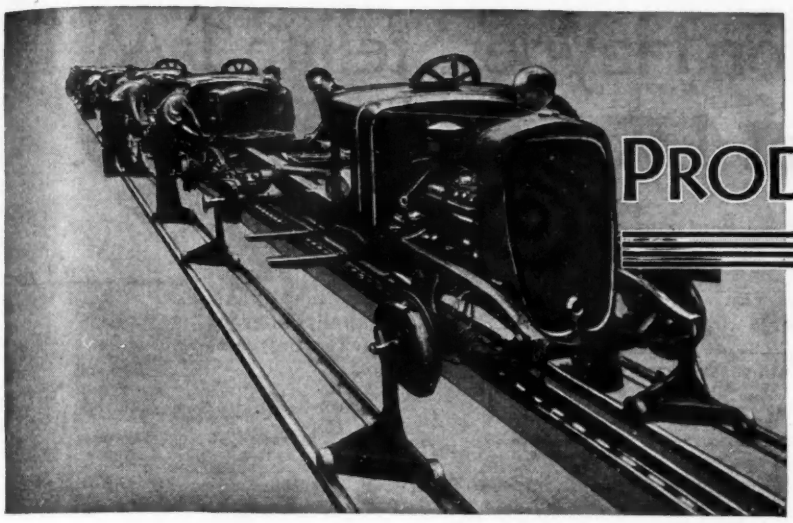
Mr. Willys continued in active control of the Overland company until 1929, when he sold out his holding of common stock of the company to the Toledo interests which had helped him to retain control of its affairs during the dark days of the early Twenties, for a consideration of something like $21,000,000. However, he held onto his large holding of preferred stock, which was fortified by a provision in the charter of the company that control should go to it if dividends on it had been defaulted for four successive terms.

Mr. Willys then accepted the post of Ambassador to Poland from President Hoover and started upon a short diplomatic career, taking up his residence in Warsaw. However, shortly after he had given up active management of the Overland company, the depression broke over the country, and the Overland company was among those hardest hit by it. From 1932 on the company was in the red every year, the deficit in 1932 exceeding $6,000,000. Interest payments on the preferred stock had to be defaulted, and as a result control of the company's affairs reverted to Mr. Willys, of which he was chairman of the board at first. The company was placed in receivership in February, 1933. In January last the preferred stockholders, with whom the voting power rested, made him president once more. He also acted as co-receiver with L. A. Miller, who had been president of the company during Mr. Willys' period of inactivity.

Mr. Willys' greatest success was with cars in the medium-low priced field. Most of his earlier models had considerable eye appeal, and as their prices were always relatively low they sold readily. Once or twice he attempted to challenge the largest producers, but with rather indifferent success. His first bid for the patronage of the distinctly low-priced market was the Overland Four, brought out immediately after the war. This was a small four-cylinder car with an engine of 143 cu. in. displacement, a wheelbase of 100 in., and quarter-elliptic springs all around. It remained the Willys largest-production model for a considerable number of years. In 1925 the Willys Overland Company produced a total of more than 200,000 cars, and netted profits of very nearly $20,000,000.

In 1926 Mr. Willys introduced the Whippet, a car said to have been developed in England but modified to adapt the design to American production methods. The banner year of the company in the Whippet period was 1928, when more than 300,000 cars were produced and more than $9,000,000 net profits earned. There was only a relatively small profit in 1929, on a volume of over 240,000 units, but that was the last profitable year of the company. Between 1914 and 1934, the company built more than 2,500,000 vehicles.

Mr. Willys was married twice. His first wife was Isabel Van Wie of Canandaigua, N.Y., who divorced him in 1934. He then married the former Mrs. Florence Dolan. Besides his widow he is survived by a daughter of his first marriage, Mrs. Jose de Landa of New York.



PRODUCTION LINES

Anti-Knock

Have you—talking to fleetmen and their suppliers—had the experience that after some period of service the gasoline seems to have deteriorated? That a new source of gas supply or the same grade suddenly goes bad and causes persistent knock? Maybe it isn't the gas at all. At least we have been told by one who investigated that the real trouble lies in the fact that after some thousands of miles the governor mechanism in the ignition distributor gets dirty or gummed up; also that the springs lose their tension. Either one or both circumstances change the advance curve and upset operation. It looks as if it would be good business to check the distributor mechanism regularly; and the gas will take care of itself.

Cast Grilles

Since our last report on the die-cast radiator grille situation, we learn that the car makers are going for it en masse. The latest is that at least twelve makes including Olds will have the die cast grille and that two other makes are considering it. Add also a truck job. Olds certainly started something for which the zinc die casters may be thankful.

Diesel Expense

Had an interesting talk with one of the outstanding British Diesel engine designers who is spending some time in the U. S. In discussing maintenance costs he brought out a point that seems to be most pertinent. An important British Diesel truck maker has been overhauling Diesel engines on contract basis for some of the real big bus and truck fleets. The idea is that engines are overhauled on a per mile basis, usually at intervals of some 60,000 miles. Now here is a significant thing. The cost for either gasoline or Diesel engines is 0.34 cents per mile; that takes care of rebuilding. And on this basis they are making more money on Diesel than they are on gasoline service. Think that over!

Souped Up

Understand that a prominent bus builder is going to find out whether supercharging is of any value on heavy-duty engines. An experimental bus is on the road now with a supercharged engine—and time will tell. Incidentally, the supercharged job is of smaller displacement than the standard engine. If the results are favorable they should be of more than passing interest to those of the truck industry.

By Photocell

Where precise temperature control is desired we note that several of the large car makers have adopted the Tag Pyrometer, which features photocell control. Two recent installations are for control of anodizing baths. One of these was placed in operation only a couple of weeks ago.

To Regularize

We understand that one of the big car builders is planning a project to regularize employment during slack seasons by building up banks of standard parts. This is a big-scale extension of the idea started by Nash last winter.

Air Conditioned

Ford was about the first, so far as we know, to air condition certain factory departments. Several days ago we visited a plant that's gearing up for 1936 production and found that they have put in a beautiful air conditioned room for piston inspection and piston and rod assembly. A good idea certainly spreads.

Mass Balance

Precise balance of engine parts is getting more and more attention. We have just seen a machine called the "mass balancer" that helps to cut crankshaft correction machining by 70 per cent. This machine balances the forging in the rough within certain limits and then cuts the centers. It's the first machine of its kind and is probably the biggest development of its kind in recent years.

Air Heaters

A bulletin describing the complete line of Ross air heaters is just off the press. Here is an interesting technical discussion of direct and indirect heating systems with control elements. Those concerned with industrial ovens for drying, baking, etc., will be interested.

Once Again

Compatibility of oils and bearings is up again for discussion. Here is something that concerns everybody —oilmen, fleetmen, and engineers. Any oils that tend to develop harmful acidity after a period of service will have to be taboo. —J. G.

MANUFACTURING MANAGEMENT METALLURGY

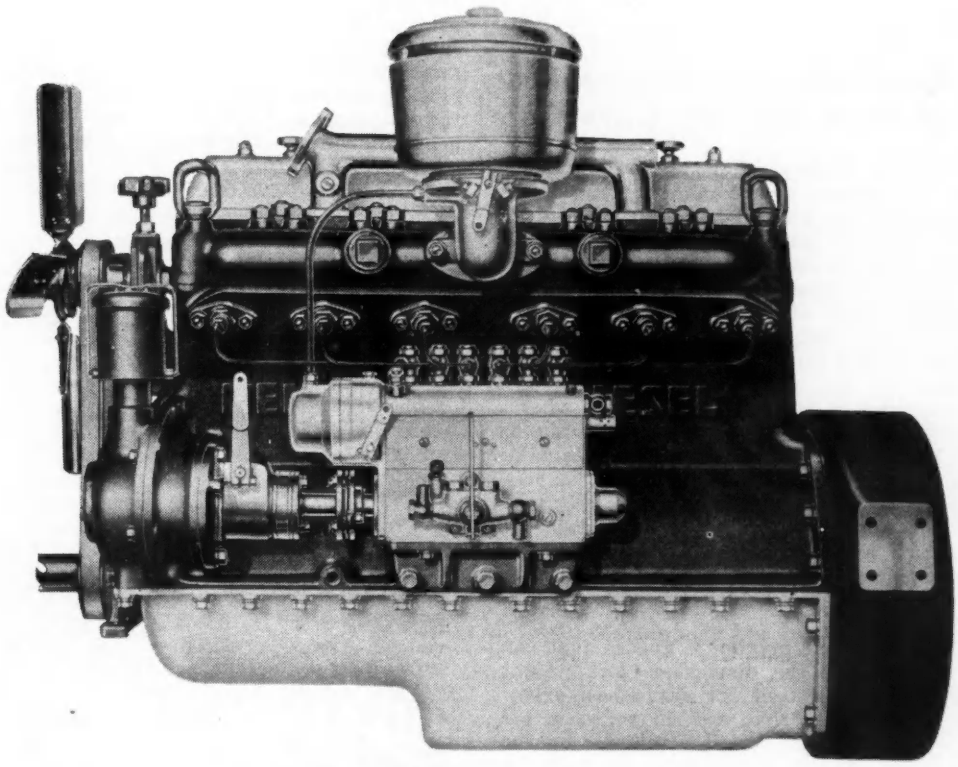
Machining Data on Haynes Stellite J-Metal Applications at Lycoming Mfg. Co.

ONE of the most important contributions to metal cutting literature is the study recently made by the Lycoming Mfg. Co., builders of the well-known Lycoming line of engines. The investigation covers the performance of Haynes-Stellite J-Metal cutting tools which are being used extensively in this plant.

The following table gives a complete analysis of the various applications of this cutting tool material. Your attention is drawn particularly to the performance of J-Metal in turning alloy steel parts.

Operation	Work	Material	Machine	Surface Speed F.P.M.	Feed in per min.	Depth Cut In	Machining Time
Rough & finish mill top & bottom faces	Cyl. block	Cast iron	Drum type mlg. mach.	18 in. cutter—114 ft. per min. 12 in. cutters—114 ft. per min. 10 in. cutters—115 ft. per min.	14 in. per min.	3/16 in.	13 min. per cycle
Rough & finish mill ends.	Cyl. block	Cast iron	Drum type mlg. mach.	114 ft. per min.	14 in. per min.	3/16 in.	8¾ min. per cycle
Rough & finish mill manifold & tappet sides.	Cyl. block	Cast iron	Special mlg. mach.	10 in. cutter—210 ft. per min. 8 in. cutter—170 ft. per min.	12 in. per min.	¼ in.	2.1 min.
Rough & finish mill cap fits & faces on main bearings.	Cyl. block	Cast iron	Special mlg. mach.	115 ft. per min.	21 in. per min.	⅛–¼ in.	2½ min.
Rough & finish mill carburetor & fuel pump pads.	Cyl. block	Cast iron	Special mlg. mach.	120 ft. per min.	12 in. per min.	3/16–¼ in.	1 min.
Rough & finish straddle mill thrust bearings & caps.	Cyl. block	Cast iron	Special mlg. mach.	130 ft. per min.	12 in. per min.	⅛ in.	1½ min.
Rough & finish mill compression head faces.	Cyl. head (12 cyl.)	Cast iron	Special mlg. mach.	110 ft. per min.	10 in. per min.	⅛ in.	3 min.
Bore combustion chambers.	Cyl. head	Cast iron	Special boring mach.	90 ft .per min.		1/16–⅛ in.	3 min.
Profile pads on top side.	Cyl. head	Cast iron	Profile mlg. machine	150 ft. per min.	20 in.	1/16–3/16 in.	2 min.
Rough & finish mill transmission & crankcase sides.	Bell housing	Cast iron	Special mlg. machine	115 ft. per min.	5½ in. per min.	3/16 in.	3½ min.
Rough & finish mill side for block	Manifold	Cast iron	Special mlg. machine	100 ft. per min.	5 in. per min.	3/16 in.	4½ min.
Rough bore, main bearings.	Cyl. block	Cast iron	Reaming machine			1/16–⅛ in.	2.3 min.
Rough turn, face and bore.	Flywheel	Cast iron	Vertical turret lathe	78 ft. per min.	0.042 in. per rev.	⅛–¼ in.	3¾ min.
Rough turn, face and bore.	Flywheel	Cast iron	Vertical turret lathe	78 ft. per min.	0.042 in. per rev.	⅛–¼ in.	9½ min.
Rough & finish face, bore & counterbore clutch face side.	Flywheel	Cast iron	Simplimatic	50-160 ft. per min.		1/32 in.	2¾ min.
Rough & finish turn, face, bore & counterbore reverse side of clutch face.	Flywheel	Cast iron	Simplimatic				2¼ min.
Rough face & bore.	Flywheel housing	Cast iron	Lathe	110 ft. per min.	1/32 in. per rev.	¼ in.	7¼ min.
Rough turn & face (1st)	Piston	Cast iron	Piston mach.	140 ft. per min.	1/32 in. per rev.	⅛ in.	1.1 min.
Cut off open end, bore and ream (2nd)	Piston	Cast iron	Piston mach.	100 ft. per min.			¾ min.
Rough groove (3rd)	Piston	Cast iron	Piston mach.	100 ft. per min.			½ min.
Rough turn, face & bore one end (1st operation)	Nut for blade gear	SAE-6135 steel. Rockwell C-37 to C-40	Turret lathe	104 ft. per min.	0.014 in. per rev.	⅛–3/16 in.	7.9 min.
Rough turn, face, bore & counterbore (2nd operation)	Nut for blade gear	SAE-6135 steel. Rockwell C-37 to C-40	Turret lathe	70 ft. per min.	0.009 in. per rev. for turning, facing and boring	⅛–3/16 in.	17.9 min.
Rough turn & face.	Nut for blade gear (short)	SAE-6135 steel	Turret lathe	90 ft. per min.	0.011 in. per rev.	3/16-¼ in.	4½ min.

Hercules Adds 250 Cu. In. Six-Cylinder Diesel



Hercules Model DJXB Diesel engine, fuel-pump side

AN additional Diesel engine, Model DJXB, has been placed in production by Hercules Motors Corp., Canton, Ohio. It is a six-cylinder 3 7/16 by 4½-in. engine of 250 cu. in. displacement and is said to be the smallest six-cylinder automotive-type Diesel engine at present on the American market. The engine develops 76 hp. at 2600 r.p.m. and shows a maximum torque of 180 lb.-ft.

The DJXB Diesel engine is interchangeable, as regards installation requirements, with the Hercules JX series of gasoline engines, which enables manufacturers of commercial vehicles to offer both gasoline and Diesel engines in their vehicles without encountering mounting complications.

In general design the DJXB is similar to the two larger Hercules Diesel engines, the DHXB with 5 by 6-in., and the DRXB with 4⅜ by 5¼-in. cylinders. There is an auxiliary combustion chamber at the side of the cylinder, and the "throat" which connects the cylinder with this chamber is so designed that as the piston approaches the end of the up-stroke, it gradually reduces the throat area, thereby automatically increasing the velocity of air flow into the chamber. This is said to ensure thorough mixing of the fuel with the air.

The crankshaft, which is made of chrome-molybdenum steel, is supported in seven rigid bearings. The crankcase, which is cast integral with the cylinders, also supports the camshaft, the latter having four bearings. Aluminum alloy pistons are used. Connecting rods are of nickel - chromium - molybdenum steel, heat-treated, and are rifle-drilled for force feed lubrication of the piston-pin bearings. These pins are of the floating type. Removable cylinder liners of the dry type are used; they are made of centrifugally cast alloy iron.

Lubrication is by force feed to all main, connecting-rod, and piston-pin bearings, and by throw-off from the connecting rods to the cylinder walls. The lubricating oil is circulated through a large-sized oil filter.

The Bosch fuel pump, with built-in vacuum-type governor, is mounted on the same side of the engine as the air cleaner, intake manifold, and injection nozzles. On the opposite side, where the exhaust manifold is located, are mounted the lubricating oil filter, the water pump, generator and starter.

The Hercules DJXB Diesel engine is designed for use on the smaller sizes of commercial vehicles as well as for agricultural, industrial, marine and oil-field applications. It is also built into a complete power unit, in either the open or fully enclosed type, as regularly used for pump and generator drives.

AUTOMOTIVE ABSTRACTS

Top Speeds and Accelerations of Front and Rear Drive Cars

A THEORETICAL determination of the maximum speed, maximum acceleration and maximum gradeability of cars with rear-wheel, front-wheel and four-wheel drive has been made in Germany and is reported on by Prof. H. Kluge and Dipl.-Ing. H. Kohl. Assuming a wheelbase length of 120 in., center of gravity located midway between front and rear axles, height of center of gravity, 28 in.; rolling friction, 20 lb. per 1000, and sliding friction of tire on road, 0.6, it is shown that the maximum propelling effort obtainable by means of the rear wheels is 30 per cent greater than that obtainable by means of the front wheels. The maximum propelling effort obtainable by driving on all four wheels is 126 per cent greater than that obtainable by driving on the front wheels alone.

In order to be able to utilize the traction completely with four-wheel drive, the proportion of power applied to the rear wheels to power applied to front wheels must be 1:1.74. The maximum grades which can be climbed with front drive, rear drive and four-wheel drive are in the proportion 1:1.30:2.26.

It is further shown that the maximum grades that can be climbed by a car having the dimensions and weight distribution given, is 32.5 per cent for rear-wheel drive; 24.6 per cent for front-wheel drive, and 58 per cent for four-wheel drive. The maximum speeds attainable by the car under consideration, assuming the powerplant to be adequate to utilize the maximum traction, are 109.5, 74.5 and 180 m.p.h. These figures apply to a car with conventional (non-streamlined) body. Since these speeds would use the traction of the wheels completely, even the slightest lateral force would start a skid; hence, in view of the need for a reserve of stability, the speed would have to be kept somewhat below the limits.

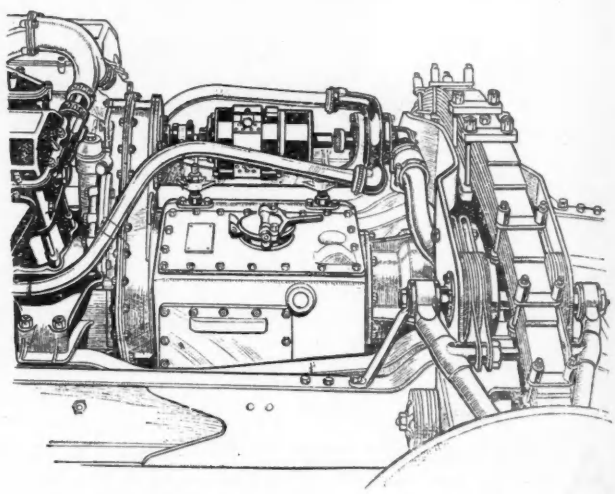
In arriving at the figures given in the foregoing, no attention was paid to the questions as to whether in the present state of the art it is possible to mount powerplants of sufficient capacity on the car, and whether it would be possible to give the cars such form as would assure sufficient stability. The maximum accelerations and gradeabilities are practically attainable, as it is only necessary to use sufficiently high gear reductions.—*ATZ*, July 25.

New Fiat Six-Cylinder Car

FIAT of Italy has just introduced a new six-cylinder light car which embodies the features of independent front springing and a backbone-type of frame. The frame consists of a central girder backbone from a point behind the gearbox to a point opposite the forward mounting of the half-elliptic rear springs, made up of channel members welded and riveted together to form a box section, and allowing clearance for the open propeller shaft. Sweeping outward from the front and rear end of this backbone are channel-section side members. The springs connect at the rear end to these side members and at the front to outriggers. There are two pairs of such outriggers, on which the body is supported. The engine has a piston displacement of 91 cu. in. and develops 43 hp. at 4200 r.p.m. It is combined with a four-speed gearbox. The front independent suspension consists of an enclosed spring on each side, damped by the action of oil in a cylinder, and from the swinging arm extending from the spring housing depends the wheel. The suspension is therefore at least very similar to the Dubonnet type. At the rear there is a stabilizer bar.—*The Autocar* of August 2.

Eyston's Front Drive Racer with Rolls-Royce Engine.

IN a new racing car built for George Eyston, the British racing driver, many standard parts are incorporated. The engine is an experimental version of the Rolls-Royce Kestrel aircraft engine (twelve 5 by 5½-in. cylinders). The most important feature is the front wheel drive. To cool the final-drive gears, an oil sump has been incorporated with its housing, and, besides, the crown wheel throws oil onto a cover plate which is in the air stream.



Forward end of Eyston's new 400 hp. front-drive racing car.

Each front wheel is supported from the main frame by heavily braced wishbone brackets whose motion is limited by rubber-faced stops and friction-type shock absorbers. The shaft taking the drive from the crown wheel to the front wheel has two universal joints of a type which has had a satisfactory history on racing Millers. Each joint is essentially a ball race, the balls being held by grooves in both inner and outer races and retained by a cage, the shape of the grooves allowing the required universal movement. The joints are easy to lubricate and they are claimed to operate satisfactorily over a wider angle than any other type. The entire joint is protected by a spherical housing.

The actual suspension consists of a big transverse, semi-elliptic spring, the leaves of which are held to each other by spring-loaded clips. Engine, gearbox and main bevel are so set that there is a direct drive. Since the auxiliaries have been removed from the engine, a sprocket has been fitted to the shaft between the engine and the gearbox for an encased chain which drives in tandem the generator and water pump.—*The Autocar*, August 2.

French Engineers Argue Aluminum Prices

AT the April meeting of the French Society of Automobile Engineers, an address on the Technique of Light Foundry Alloys of Aluminum and their Application in Automobile Construction was delivered by A. Dumas, chief engineer of the French Aluminum Co. M. Dumas talked on the metallurgy of aluminum and gave numerous illustrations of the use of the light metal in automobile parts, including complete engine blocks.

The discussion was opened by M. Andreau, who said he agreed with the author that "aluminum is a metal which seems to have been created expressly for the automobile." Nevertheless, every year those automobile engineers who provide for its use in automobile parts are severely criticised by the manufacturers. The result of this has been not an increase in its use, but a severe diminution, and one might almost say that this metal has disappeared from French vehicles. It has been retained only where its qualities, such as its high heat conductivity, rigidity and lightness, make it indispensable. Its use is continued on the former scale only in cases where production cost is hardly considered, as in de luxe vehicles, high-speed Diesel engines, etc.

The reason for this retrogression, M. Andreau said, was the maintenance of exaggerated prices. One of the largest automobile manufacturers, who when compelled to abandon aluminum for engines and transmission cases, said he had paid ten millions too much for aluminum. The maintenance of such prices had led to a gradual abandonment of the use of this metal in spite of the desire of engineering departments to retain it. M. Andreau added that France is the largest producer of aluminum in the world.

Replying to M. Andreau, M. Dumas said that great efforts had been made already to bring down the price of aluminum, and since 1926 the price of the metal had been lowered five time, without a single intermediate increase—from 14.60 francs per kilogram on Dec. 31, 1926, to 9.5 francs since October, 1934. There were few metals, he said, the price of which had been so stable during the last nine years as that of aluminum.

In order to give automobile manufacturers assurance that the price of aluminum would remain stable in the event its use in the automobile industry should increase materially the French Aluminum Company was prepared to enter into long-time contracts with automobile manufacturers safeguarding them against any increase as long as the purchasing power of the French franc remained what it was now.—(*Journal of the French Society of Automobile Engineers* for April-May.

Broader Field For Nitriding

SOME cast-iron parts require to be hardened over certain portions of their surface. This result can be achieved either by local hardening, as extensively practiced in tool manufacture, or else by first hardening the part as a whole and then annealing it except for those portions which are to remain hard. When these plans are followed the hardest portions are not necessarily at the surface. The only known method of surface hardening of cast iron by chemical treatment consists in nitrading.

Until quite recently, nitriding of cast iron was applied only to simple forms, socalled bodies of revolution, which could be produced by the centrifugal casting process, which results in a fine, dense, uniform grain with a minimum of defects. Parts which are to remain soft are given a coating of tin or of a tin-lead alloy, which is preferably applied with the metallizing pistol.

In order to generalize the application of the nitriding process to castings, it is necessary to find some form of sand casting produced by ordinary methods which will take a hard, non-brittle case. With this end in view, three methods have been investigated that give promise of adaptability to regular industrial production. The materials employed are as follows: (1) Cast iron with low graphite content in which the small amount of graphite is a very finely divided; (2) White iron slightly mottled in the molten state, graphitized by annealing, in which the graphite occurs in the form of nodules; (3) Irons of such composition that when cast in sand they are gray, the parts to be nitrided being chill-cast so that they have a white texture and have a fine graphite distribution only after annealing of the entire casting. This last method seems to be very adaptable and may find wide application.—*Le Génie Civil*, July 20.

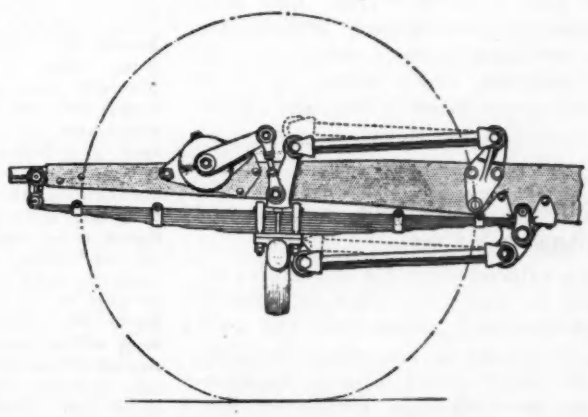
New Daimler Light 20

THE Daimler Co., Ltd., of Coventry, England, has announced a new model, the Daimler Light Twenty. Just how light the car is is not revealed in the description under review, but it is brought out that it has a wheelbase of 114 in. and is equipped with a six-cylinder 2 11/16 by 4⅛ in. engine with a piston displacement of 156 cu. in. The six-light sedan sells at £675 ($3,350). A feature of the engine is that the cylinder head containing the valves is integral with the block.

In order to improve the ride, the designers have increased the flexibility of the front springs, and to be able to do that without interference with the steering, they shackle the springs at both front and rear and connect the front axle and frame by a pair of parallel radius rods on each side, one above the other. These radius rods, of course, take up the brake torque on the front wheels.

To prevent what is referred to as "front end dither" on bad roads, the radiator and front fenders are mounted independently of the frame. The front fenders are fastened to the forward ends of a ramshorn-shaped pressed steel member of great strength fulcrumed at the center of the front cross member. This feature, of course, is quite familiar here.

Girling brakes are fitted and are assisted by a vacuum booster. Following long established Daimler practice, the car carries a fluid flywheel and a four-speed preselective planetary transmission. Among the items of equipment are the Lucas-Bijur centralized automatic chassis lubrication system and the D. W. S. permanent four-wheel jacking set. The car was designed more particularly with a view to easy operation of the controls.—*The Autocar*, July 12.



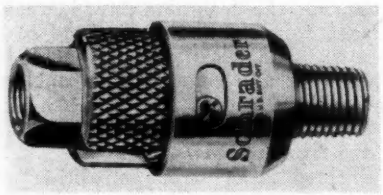
Double radius rods for front axle.

NEW DEVELOPMENTS
Automotive Parts, Accessories and Production Tools

Schrader Quick Acting Couplers

Schrader Quick Acting Couplers, made by A. Schrader's Son, Brooklyn, N. Y., are especially adaptable for attaching and disconnecting airline equipment. In as brief a time as plugging in an electric socket, grease guns, spray guns, car lifts, air chucks, blow guns, chuck gages, etc., may be interchanged at one or several pipe outlets, as well as at the working end of the hose.

They are made of cadmium plated steel; working parts are a tripping deflator and a fine rubber washer, replaceable when worn from long service.



Hot Water Heater

The new Chanson Imperial, Model G 10, manufactured by the Illinois Iron & Bolt, Carpentersville, Ill., is a cross-flow, hot-water heater designed especially for the new low, streamlined type car. It is only about half as high as many of the standard vertical type heaters, and therefore allows more leg room even when it is installed under the glove compartments of extremely low cars of air-flow type. Like other heaters in the Chanson 1935-36 line, the new Imperial has a swinging bracket mounting, which allows the entire heater to be turned to the right or left.

Permite Bimetallic Exhaust Valve

An exhaust valve for automotive engines in which the head is made of high-chromium nickel austenitic steel and the stem of low nickel-chromium steel (S.A.E. 3140) is being manufactured by Aluminum Industries, Inc., Cincinnati, Ohio, and is known as the Permite Diachrome valve. Head and stem are welded together by the fusion welding process.

The steel used for the heads of these valves contains 21 per cent chromium and 12 per cent nickel, and it is said to resist both pitting and oxidation by heat well. The transformation temperature of the steel is outside the normal valve-operating temperatures, hence the structure of the head is not altered. Being practically immune to heat treatment, the austenitic steel valve head does not harden under successive heating and cooling.

The S.A.E. 3140 steel used for the lower stem has high resistance to shock and good wearing qualities conssitent with the required strength for satisfactory operation. It need not have the property of high-heat resistance and strength at elevated temperatures, since it is not subjected to these conditions as is the head of the valve.

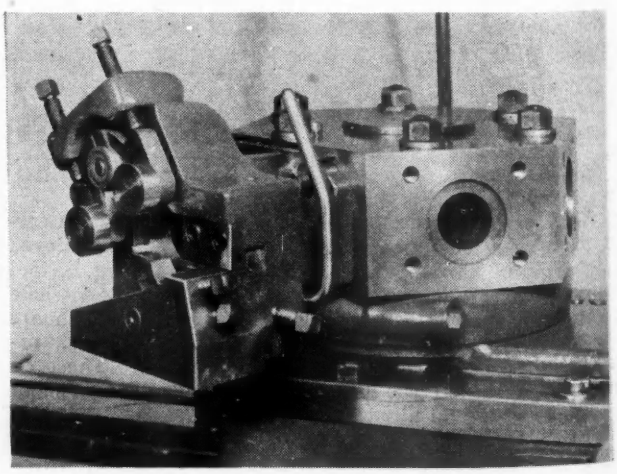
Continuous Tire Inflation System Is Developed

Announcement has been made by A. Schrader's Son Division of Scovill Manufacturing Co. of the Schrader running or continuous tire inflation system, which provides means whereby the inflation pressure of the tires may be gaged or controlled from the body of the vehicle. This is made possible by means of a rotating pressure joint attached to the wheel hub, permitting tubular leads to interconnect the valve mouth of the tire tube with tanks, gages, pumps, regulators or alarms carried on the vehicle body. The operator therefore may keep constantly informed of the inflation pressures of the various tires, and he can increase or decrease the pressures at will either while running or while the car is at a standstill. The pressure may be controlled either manually or automatically, and pressures may be equalized either between all of the tires or between any combination thereof.

The system is intended to appeal particularly to operators of buses, trucks, and tractor-trailer combinations. The advantages claimed are greater safety in operation and greater tire life. With super-balloon tires on passenger cars the system is claimed to improve the riding comfort and the control. A further advantage claimed is that the system makes it easy to reduce the inflation pressure to gain additional traction in sand or soft ground.

Heavy Duty Transmission

Cotta Transmission Corp., Rockford, Ill., has developed a special heavy-duty transmission for use with Waukesha Models ELH and WOK engines. This transmission has four speeds forward and three reverse. It is being used on portable drilling rigs in Texas and Oklahoma oil fields. We are informed that while the transmission was developed to be used for transmitting the power of one of these engines, some are being used with two engines in tandem and are handling this double load satisfactorily. The transmission is of the constant-mesh type and speed changes can be made with only slight deceleration.



The Warner & Swasey Co., Cleveland, Ohio, has brought out the heavy bar turning attachment shown here. It is intended for use with cemented-carbide tools and is so designed as to require no lubrication except the normal stream of cutting fluid. This attachment will be demonstrated at the coming National Machine Tool Exposition in Cleveland.